

**YANGON UNIVERSITY OF ECONOMICS
MASTER OF PUBLIC ADMINISTRATION PROGRAMME**

**A STUDY ON THE STRAY DOG POPULATIONS CONTROL
ACTIVITIES IN YANGON REGION (CASE STUDY ON
SANCHAUNG TOWNSHIP)**

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MPA – 5 (18th Batch)**

JULY, 2019

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ACTIVITIES IN YANGON REGION (CASE STUDY ON
SANCHAUNG TOWNSHIP)**

A thesis submitted as a partial fulfillment towards the requirements for the degree of
Master of Public Administration (MPA)

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MASTER OF PUBLIC ADMINISTRATION PROGRAMME

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ABSTRACT

With the purpose to resolve the existence of stray dogs and its related public problems in Yangon, the stray dog populations control practices by key performer, YCDC and other stakeholders are studied by using descriptive method. The data and facts about different kinds of control practices such as neutering, vaccinating, sheltering, educating the public about the responsible ownership guided by the World Organization for Animal Health (OIE) and vaccination campaign program with international organizations from 2014 to 2018 updated are presented. In this study, the KII interview and the selected township household survey on Sanchaung Township are conducted to explore different perspectives and perceptions of multi-stakeholders upon stray dog existence and its control practices in Yangon Region. It is founded that poor people participation with key performers, wrong feeding practices and relatively inefficient control practices are the highest controversial rooted causes for stray dog populations controls. It can be seen that the efficiency of stray dog practices could not reach up to the welfare maximizing level but acceptable to some extent as the progressive plans are being implemented. In this study, the lack of mutual understanding, communication and weaken cooperation between public and key performers are the epidemic critical constraints of stray dog populations control practices in Yangon. All in all, it is founded that the accountability and responsibility gaps between public and key performers can only be filled with the mutual trust building and the cooperation enhancing.

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TABLE OF CONTENTS

	Page
ABSTRACT	i
ACKNOWLEDGEMENT	ii
TABLE OF CONTENTS	iii
LIST OF TABELS	v
LIST IF FIGURES	vi
LIST OF ABBREVIATIONS	vii
CHAPTER I INTRODUCTION	
1.1 Rationale of the Study	2
1.2 Objectives of the Study	4
1.3 Method of Study	4
1.4 Scope and Limitations of the Study	4
1.5 Organization of the Study	5
CHAPTER II LITERATURE REVIEW	
2.1 Stray Dogs	6
2.2 Classification of Dogs by their Dependency Upon Human	7
2.3 Perspective of People on Dog Population and Dynamics of Dog Ownership in Developing Countries	8
2.4 Public and Animal Health Concerns as a Driving Force for DPM (Dogs Population Management)	10
2.5 Control Measures	11
2.6 Human Health Risks and Free Roaming Dogs	16
2.7 Stray Dogs Control Management by Different Countries	18
2.8 Review on Previous Studies	25
CHAPTER III STRAY DOGS POPULATION CONTROL IN YANGON	
3.1 Profile of Yangon City Development Committee	26
3.2 The Operation System of the Veterinary and Slaughter House	27
3.3 Stray Dog Populations Control Practices of YCDC	30
3.4 Progressive Activities Undertaking with Multi-stakeholders	37

CHAPTER IV ANALYSIS ON THE STRAY DOG CONTROL PRACTICES	
4.1 Survey Profile	39
4.2 Survey Design	39
4.3 Survey Result	40
4.4 Key Informant Interview Results	41
4.5 Township Households Survey Results	49
CHAPTER V CONCLUSION	
5.1 Findings	59
5.2 Recommendations	61
REFERENCES	63
APPENDICES	66

LIST OF TABLES

Table No.		Page
3.1	Dog Bite Incidents 2016 to 2018	31
3.2	Stray Dog Populations Control by Vaccination Method	32
3.3	Stray Dog Population Control by Sterilization/Castration Method	33
3.4	Stray Dog Population Control by Removed- Replaced Method	34
3.5	Stray Dog Population Control by Euthanasia Method	36
4.1	Qualification of Interviewees	41
4.2	Public Knowledge Level and Public Participation Level	42
4.3	Attitude of Interviewees on Responsible Ownership	44
4.4	Control Activities by Key Performers	46
4.5	Alternative Ways to Become More Effective Stray Dog Populations Control	47
4.6	Demographic Characteristic of Respondents	50
4.7	Experience and Perception on Stray Dogs	51
4.8	Feeding Practices and Behaviorism	52
4.9	Public Perception on Responsible Ownership	54
4.10	Attitude and Experience of Public Participation	55
4.11	Public Participation Related Matter	56
4.12	Public Priority on Different kinds of Control Activities by Government	57
4.13	Level of Effectiveness and Government' Barriers for More Efficient Control	57

LIST OF FIGURES

Figure No.		Page
3.1	Stray Dog Populations Control by Vaccination, Sterilization and Removed - Replaced Methods	35
3.2	Stray Dog Populations Control by Euthanasia Method	37

LIST OF ABBREVIATIONS

AARF	Abaco Animals Require Friends
ABC Method	Animal Birth Control Method
ARV Distribution	Antiretroviral Distribution
AWNGOs	Animal Welfare Non-Governmental Organizations
CNR Method	Capture Neuter Released Method
DPM	Dog Populations Management
FAO	Food and Agriculture Organization
GNPS	Galapagos National Park Service
HIS	Help In Sufferings
HSI	Human Society International
KIIs	Key Informant Interviews
NGOs	Non-Governmental Organizations
OIE	World Organization for Animal Health
OIE (STANDS)	World Organization for Animal Health Outcomes
SNIP	A Spay/Neuter Incentive Program
WVS	World Veterinary Service
WSPA	World Society for the Protection of Animal
WHO	World Health Organization
YYS	Yayasan Yudisthira Swarga
YCDC	Yangon City Development Committee
YGH	Yangon General Hospital

CHAPTER I

INTRODUCTION

Stray dogs, known in scientific literature as free-ranging urban dogs or urban free ranging dogs, are unconfined dogs that live in cities. They live virtually wherever cities exist and the local human population allows, especially in the developing world. With the development of cities, stray dogs have become one of the most serious public management problems. Stray dogs have many negative impacts on city environment and human health. Stray dogs cause noise pollution, feces garbage and traffic accidents. Barking and howling are the accompaniment to dog fights which invariably take place over mating. Stray dogs can cause a collision when dogs run into the road, which might even result in injury to other people and also to herself. Dog bites are most occurred when dogs are trying to mate and fighting among themselves for foods. Pedestrians and other humans in the vicinity often get bitten accidentally. Females with pups to protect may also be aggressive and bite people who approach their litter. As long as there sufficient resources, within the foreseeable future, every dead animal's place will be taken by another animal and the population will increase to its maximum carrying capacity. Culling or collection and placing in asylums, only work for a very limited time and are useless as measures for a long term reduction of populations. So also the adopting of dogs abroad does not help diminish the problem in the country origin. There will be new dogs to take their places which will then also have to fend for themselves in pitiful circumstances. What happens a lot is that a pack produces new offspring to secure their strength. More pups are born, but because of a lack of sufficient resources many weak dogs eventually die very unpleasantly, through malnourishment or dehydration. It has been scientifically proven that human interference causes overpopulation of dogs. Without food, water and shelter populations of dogs go extinct. Water and shelter are always present and the dogs survive because they are fed by humans, find edible wastes or attack flock. Dogs are thus dependent on humans and cannot maintain themselves as cats do. It need to accept that over populated canine populations are not responsible only

on Public Sector Authorized Stakeholders like Dog Shelters, Municipal, Veterinarian Associations and many more but also people need to aware their feeding practices.

1.1 Rationale of the Study

The presence of stray and roaming dogs at roadsides and streets projects the image of an uncaring society. While in the lesser developed country this may be passed off as resulting from economic hardship and lack of skillful human and technical resources, the multi stake holders need to find most efficient marginal revenue point in the controlling activities. In the earlier time, the public cannot conscious about the danger of stray dogs and their related health problems. As household populations are not overcrowded within streets, the existence of stray dogs did not seem to be a big problem in former time. In these days, dog bites and rabies disease is spreading among the public. Within such a blink, the mass dog populations become the closest danger for the community. Other considerations when calculating the cost of stray and roaming pets to countries include the actual costs of animal control (time, equipment, manpower) and the burden of illness (cost of health care) on society as a result of illness or injury caused by strays.

Additionally, the World Health Organization (WHO) (1996) estimates that 25,000– 27,000 domestic production animals (i.e., “livestock”) contract rabies as a result of exposure to dogs or other rabies vectors. Although all warm-blooded animals can get and transmit rabies, dogs are the most common carrier. The World Health Organization (WHO) estimates that there are more than 200 million stray dogs worldwide and that every year, 55,000 people die from rabies. According to the World Health Organization (WHO), a person dies every 15 minutes from rabies globally. More than 95 percent of rabies-related human deaths occur in Asia and Africa, and within those areas, Myanmar is considered a “high rabies endemic country.” The WHO states that. Starting from 1915, Rabies was firstly founded in Myanmar. Myanmar has the highest number of rabies-related deaths in Southeast Asia with some 1,000 deaths per year.

Yangon is densely populated city as well as former historical capital of Myanmar, dwelling on 7,360,703 in metropolitan, 5,160,512 in urban area and 2,200,191 in rural area settling in 3,930 square meter (10,170 km²) per 2014 Census data. Yangon has 45 townships and 742 wards. Among these 45 townships, Sanchaung is one of the most urbanized townships and many apartments and high buildings are existed. As the number of residences are growing, the canine populations are likely to grow day by day within the narrow streets of Sanchaung. According to the 2018 Yangon General Hospital Records,

eighty percent of dog bites patients are from Sanchaung Township. Because of the abundant food sources, many stray dogs are enjoy to live the closest areas of the community. By regular feeding of some dog lovers to those street dogs, the dog make grouping and live near the place. The role of dog lovers is central for this issue. The dog lovers feed them where near their apartments, entrance of apartment as their own pets but when in come to dog bite issues come, there is no guardian at all. Out of 185 canine species, the stray dogs in Myanmar are Indian-pariah species. As a female dog give birth 3 times in a year and the average rate is 4 to 6 baby dog in a birth. So in a single year, a female dog can produce 12 to 18 baby dogs. As there is weak legal binding for such behaviors, people living in Sanchaung Township are seriously suffering the danger of such stray dogs.

Also, there are rising number of people being bitten by dogs in Yangon region. The number of people who suffered dog bites in October 2018 totaled 1394, the highest number recorded in the last three years. A total of 8629 people suffered dog bites from January to October in 2018. In 2017, a total of 35839 people sought treatment for dog bites in Yangon Region, according to the Public Health Department, topping all states and regions in the number of cases. According to the 2010 random sample survey of Dog Populations, the stray dog growth rate is twenty to twenty-five percent in average. According to the 2019 Ministry of Agriculture, Livestock and Irrigation' estimation, there will be 3.8 million totals in numbers and human and dog ratio is about 1:20 approximately. Yangon City Development Committee frequently receive 10 to 15 complain letter to remove stray dogs in their community as they suffer frequently health-related and serious social problems. The problem of thousands of stray dogs in the country's economic capital has been ongoing for decades now and different measures have been tried to deal with the issue by both the government and animal rights activists. Still, the stray dogs related problems tarnish more and more directly to the public and it is insistently dependent upon the authorized management municipals. A few years ago the Yangon City Development Committee (YCDC) regularly conducted poisoning and culling, but the problem persists. The YCDC is currently using six methods to control the stray dog populations in the city: neutering, vaccination, sending dangerous dogs to shelters, capture and rehoming, euthanasia and promoting responsible pet ownership. It is highly considerable that too much constraints and epidemic issues might be consisted in implementing to mitigate the over- populated canine problems. By studying the stray dog population control status and its stakeholders, the hidden constraints and problems

concerning to the stray dog controlling practices and the mass amount of stray dogs' existence can be explored deliberately.

1.2 Objective of the Study

The objective of the study is to explore current status of stray dog control practices for urban cleaning environment led by the key stakeholders mainly YCDC and to identify the different opinions, knowledge and perceptions of both key performers and selected households in Sanchaung Township regarding to the existence of stray dog populations and its control practices by YCDC.

1.3 Method of Study

This study is descriptive method with secondary data from literature, books, publications, departmental website and international research papers. Primary data will be collected from survey by using questionnaires as quantitative and qualitative method. Face-to-Face interview with selected households, KIIs interviews with officials from YCDC and private animal shelters.

1.4 Scope and Limitations of the Study

The scope of the study covers the current status of stray dog population control activities, led actively by YCDC's Veterinary Department and multi stake holders. The key informant interview is conducted for 15 key persons to acquire the ground field experiences, deepen knowledge and diverse perception of key persons mainly led in stray dog controlling activities. The household surveying will be conducted for 200 Sample for Sanchaung Township to examine the knowledge and perception level of normal people about the stray dog populations control methods in Yangon Region. Although there are so many stray dogs related public health problems such as rabies and zoonotic disease, it can be seen that the current status of stray dog population control management by key stakeholders are only focused.

1.5 Organization of the Study

This thesis is presented in five chapters. Chapter One is an introductory chapter and provides the rationale, objective, method, scope and limitation and organization of the study. Chapter two is literature review on the stray dog populations control practices and their related matters. Chapter three explored the historical background and current stray dog population control practices and status by YCDC and other stakeholders' participation. In Chapter four, there is an analysis on the different perspectives and approaches on the stray dogs' existence and controlling practices by key interviewee and the households living in Sanchaung Township by using descriptive method. Lastly, Chapter five concludes with findings and recommendations.

CHAPTER II

LITERATURE REVIEW

2.1 Stray Dogs

Dogs are starting to appear with people migration to their own land after BC10000. The global dog population is estimated to be 900 million and rising. Approximately 83% of these dogs live unrestrained. Out of 83%, 17–24% of dogs can live as pets in the developed countries. In the developing world, pet dogs are uncommon but there are many villages, community or feral dogs. There are so many canine-related species such as wolf, coyotes, jackals, dingoes also tamed canine-related species existed in our world. Among them, *Canis-Lupus-Familiaris* specie is not strong enough and dependable to the human society. That canine specie has usually existed around human society since before hundred years ago and survived by food sources from the community. Usually, it can say that the most taming ones among other canine species and people has nurtured them as their domesticated animals. Because of the some impoverish matters, the abandon matters were started to appear in the community and stray dogs are common in our society nowadays. Stray dogs' life expectancy is 6 to 8 years; it is almost a half of pet dogs' life expectancy. The second generation of stray dog is considered to be feral; they have low survival and productivity rates due to poor human handling problems. There is no biological difference between stray dogs with owned dogs. They depend on people for resources and have high reproductive capacity. A female dog can produce 4 pups every six month that add up to more than 5000 dogs in 5 years.

Problems associated with stray dogs can be group into six categories: public health environmental contamination nuisance factors damage to the property animal welfare. As a public health issues zoonosis disease transmission such as rabies, bite incidence. Dogs bite may be responsible for some else owner or care taker. As the environmental contamination issues, it can be seen dogs' deposition of excreta near or in area inhabited by people. Stray Dogs are potential genetic contaminators of wild animals. As the nuisance factors, it can be seen that barking, howling aggressive interactions are occurred during mating seasons among stray dogs.

2.2 Classification of Dogs by their Dependency Upon Humans

Owned/Controlled Dogs

They are totally dependent upon an owner for care and Controlled resources. It is generally under close physical control of the owner. Many of their related matters such feeding, birth control behaviors, defecating are confined to the owners property or control even in the public places.

Owned/ Not Controlled Stray Dogs

They are Free-roaming dogs and can also call Community or neighborhood dogs. They are either entirely free to roam or may be semi restricted at particular times of the day. It may or may not be sterilized and they have potential for high reproductive capacity and rearing rate.

Abandoned/ Unwanted Stray Dogs by their Owners

Although they are not controlled by care keepers at the moment, they were once dependent on an owner for care. But, Owner is no longer willing to provide resources for their survival and also may or may not fed by other members of the community (food may be delivered intermittently Survive by scavenging or hunting) . Poor survival prospects are feasible as there is no longer a caretaker to provide food or shelter.

Feral/Not Controlled Stray Dogs

Although they are offspring of stray dogs, they are suffered by poorly socialized to human handling. The only survival way is scavenging and it is the lowest type of reproductive capacity among stray dog populations.

A definition of a stray dog may vary from country to country and depends on differences in national or local regulations. Within the European Union, Stray animals is an animal under human care which is not under permanent control or supervision of any natural person or a keeper and which moves freely outside its accommodation, enclosure or outside the household of its keeper, whereas abandoned animal is any animal originally under human care but it is no longer under direct control or supervision of a natural person or a keeper. For the European Union countries, Stray animals are existed fully control under supervision of its keeper. Only abandoned animal needs the responsibility of the community or control person.

In some countries, a dog may be owned but allowed to roam free in the neighborhoods. In other countries, any dog without a human supervision, which is found on the street, is considered to be a stray dog. According to the World Society for the Protection of Animals (WSPA), across countries, dogs are classified as stray by their dependency upon humans. The dependency on humans depends on a degree of human control of over dogs across countries. Therefore, a main feature of the WSAP's dog classification is ownership that determines degree of control over dogs' physical location and reproduction. The ownership plays a key role in stray dog management and control. Without human supervision, dogs can still survive and reproduce because human infrastructure provides them with food and shelter.

2.3 Perspectives of People on Dog Populations and Dynamics of Dog Ownership in Developing Countries

Cultural differences in views of dog ownership and the role of dogs in society influence the prevalence of dogs, the condition of free-roaming dogs, and dog control policies. In some developing countries, dogs are revered. In Bali, for example, dogs are an important part of mythology, are treated with reverence, and are given ceremonial food offerings. In Bali and many other developing countries, cultural traditions prohibit or oppose euthanasia, and the development of a network of shelters is impractical. Dogs may also be a status symbol for upper-income families in some countries (Reece, 1 January 2014).

Dogs living with humans may be classified into four categories: pets, community dogs, strays, and ferals. In developed countries the majority of dogs are pets (i.e., they are allowed in the house, given names, regarded as part of the family, and never eaten). Those dogs that are not pets are either stray animals or true ferals (a very small percentage). Except in some traditional communities (e.g., Native American), there are no community dogs. In most developing countries, the main function of dogs is to protect property. Dogs in Soweto, South Africa, are used primarily to guard livestock and property and to hunt. In Machakos District, Kenya, 99 percent of households say that guard duty is their dogs' primary function. In Zimbabwe 60 percent view dogs as guards, and 73.1 percent see dogs as a deterrent to wildlife that they perceive as pests, such as elephants, baboons, lions, and leopards. In fact, in Africa increases in dog populations may reflect heightened security concerns. In New Providence, Bahamas, security is also the main reason for keeping dogs for 50.4 percent of households. In the Thungsong

District of Thailand, 83 percent of households keep dogs as guard animals. In Miacatlan, Mexico, 65 percent of households reported having a dog for security reasons (Reece, 1 January 2014).

Patterns of dog ownership in many developing countries differ from those in the United States and other industrialized nations. In developing countries most dogs are community dogs who are affiliated with neighborhoods rather than with individual owners. WHO characterizes dogs in developing countries as restricted dogs, semi restricted family dogs, neighborhood dogs, and feral dogs. Based on their level of reliance on humans for food, shelter, and care, dogs are fully dependent (restricted dogs), semi dependent (family dogs and neighborhood/community dogs), or not dependent (feral/stray dogs).

Increasingly, most dog populations depend at some level on referral households. Only a small proportion of dogs in South America, Asia, and Africa rely on markets, slaughterhouses, dumps, and restaurants as their sole sources of food (Fielding, Mather, and Isaacs, 2005). An estimated 10 percent of dogs are not associated with particular households. A Zimbabwe study concluded that all dogs are at least semi dependent on people and that none is completely “ownerless”. A 1999 survey in Bangkok found that 20 percent of dogs are ownerless.

Dogs without a referral household have the lowest reproductive and pup survival rates. Unreachable strays for vaccination had been assumed to represent 30–70 percent of the dog populations. However, in Nepal, 86–97 percent of dogs are accessible. It is confirmed that at most 15 percent of dogs may be inaccessible to vaccination. Nonetheless, the majority of dogs in developing countries face few restrictions on their movements. In Kenya, 69 percent of dogs are never restricted. In the Thungsong District of Thailand, 74 percent of dogs are allowed to roam freely. In New Providence, Bahamas, 73 percent of households keep their dogs outside, and 43 percent of households allow at least one dog to roam. While most dogs may depend on a particular household or neighborhood, the resources provided at “home” sites are often insufficient. Most dogs roam to demand for food since they are not fed daily by owners. Owners also allow dogs loose because they believe unrestricted dogs can better protect property (Cleveland, 2006).

2.4 Public and Animal Health Concerns as a Driving Force for DPM (Dogs Population Management)

The need to control the number of dogs, especially stray dogs, is motivated by public health concerns, particularly in relation to rabies transmission. In addition to disease transmission, dog bites and the fear of aggressive dogs also pose a risk to human health and well-being. Promoting responsible dog ownership within community is the best way to control numerous numbers of stray dogs effectively and efficiently. Furthermore, educational and bite prevention programmes for the public and, especially, children should always include guidance on how to interact with animals and what to do when approached by dogs, particularly those that show signs of fear and/or aggression. Preventive measures such as vaccination and sterilization to control disease should be promoted. However, euthanasia is recommended for dogs suffering from diseases but it should be humane. Sterilization, like vaccinating can promote dog populations' welfare and increases the longevity of dogs. Population level sterilization, Animal Birth Control (ABC) programmes may bring the dog population down and it can promote the demand of stray dogs by human as they no longer have negative socio-economic effects to the community. Better insight into dog population dynamics is needed, including an understanding of the relationship between disease transmission and animal density, dog population turnover and mobility. Furthermore, the behavior of animals, rates of dog-dog and dog-human interaction, and the nature of dog ownership can all influence disease transmission as well as accessibility for vaccination or treatment.

Religious beliefs and specific cultural contexts call for different DPM applications. Clearly a 'one size fits all' solution cannot apply as dogs have multiple functions in society. In general, people who like dogs will more readily adopt a stray dog. Furthermore, if they have the means and the knowledge, they will vaccinate their animal, have it sterilized and are less likely to abandon it or to allow it to roam freely. Hence, if attitudes to dogs can be changed, this will also influence behavior in relation to their care, when combined with access to affordable veterinary services. Urbanization and the increase of edible waste, especially in developing and transition countries, appear to contribute to a rise in dog populations. Circumstances that lead to the intentional or forced mobility of people, such as military conflicts, civil unrest, natural disaster or the death of the owner, cause dogs to become strays. The lack of veterinary care, poor health, as well as the lack of value given to stray dogs appeared to become the risks of spreading disease than under human control. Although many countries have legislation that

regulates the keeping of dogs, their identification and registration, as well as stipulates compulsory vaccination, it is often not adequately enforced. Nevertheless, responsible dog ownership and dog management should be incorporated into dog-related legislation and its implementation supported through education and enforcement. Given public health risks, legislation should apply not only to owned dog but to stray dog populations.

In many cases, the control of dog-related zoonotic diseases is outweighed by other priorities as dogs have relatively little value when compared to livestock. This is especially the case in countries where dog owners with limited resources are reluctant to pay for dog rabies vaccinations. Furthermore, owners can be held responsible for providing financial support for the care of any person bitten by their dog and may also be required to pay compensation to the victim. The awareness message such as if the community avoid the responsible ownership concern to the own and stray dogs, the negative effects dwelled on them definitely.

The implementation of DPM programmes in many countries falls under the responsibility of the same municipalities that are also responsible for slaughterhouses and waste removal in their area. As slaughterhouses and garbage dumps often provide important sources of food for roaming dogs, overall removal of waste should be an integral part of any dog control programme. This management should be done with care and in combination with dog population reduction. Governments, however, often only react when dogs become an economic problem. Generally, insufficient resources are allocated for dog management, vaccination, identification, training, education and sterilization. Specific zoonoses control programmes in the area could cover part of the required financial and human resources for wider DPM. In European countries, mandatory identification and registration programmes for dogs can provide a source of income to fund further dog management programmes, including those for dog vaccination and treatment.

2.5 Control Measures

According to the OIE (World Organization for Animal Health) Terrestrial Animal Health Standards Commission, the following control measures could be implemented according to the national context and local circumstances. Measures may be used in combination. Euthanasia of dogs, used alone, is not an effective control measure. If used, it should be done humanely and in combination with other measures to achieve effective long term control. It is also important that authorities gain an understanding of people's

attitudes towards dog ownership so that they can develop a cooperative approach to the control of dog populations.

Education and Legislation for Responsible Ownership

Encouraging dog owners to be more responsible will reduce the number of dogs are allowed to roam, improve the health and welfare of dogs, and minimise the risk that dogs pose to the community. The promotion of responsible dog ownership through legislation and education is a necessary part of a dog population control programme. Collaboration with local government authorities, animal welfare NGOs, kennel clubs, private veterinarians and veterinary organisations will assist Veterinary Authorities in establishing and maintaining programmes. Education on responsible dog ownership (for the currently owned dog and any offspring it produces) should address the following elements:

- (a) the importance of proper selection and care to ensure the welfare of the dog and any offspring; the latter may include preparing the dog to cope with its environment through attention to socialisation and training;
- (b) registration and identification of dogs
- (c) disease prevention, in particular zoonotic disease, e.g. through regular vaccination in rabies endemic areas;
- (d) preventing negative impacts of dogs on the community, via pollution (e.g. feces and noise), risks to human health through biting or traffic accidents and risks to other dogs, wildlife, livestock and other companion animal species;
- (e) control of dog reproduction.

In order to achieve a shift towards responsible ownership, a combination of legislation, public awareness, education, and promotion of these elements will be required. It may also be necessary to improve access to resources supporting responsible ownership, such as veterinary care, identification and registration services and measures for control of zoonotic diseases.

Registration and Identification of Dogs (Licensing)

A core component of dog population control by the Competent Authorities is the registration and identification of owned dogs. This may include granting licences to owners and breeders. Registration and identification may be emphasized as part of responsible dog ownership and are often linked to animal health programs, for example, mandatory rabies vaccination and traceability.

Registration of animals in a centralised database can be used to support the enforcement of legislation and the reuniting of lost animals with owners. The control of dog reproduction by sterilisation can be encouraged through financial incentives presented by differential licensing fees.

Reproductive Control

Controlling reproduction in dogs prevents the birth of unwanted puppies and can help address the balance between demand for dogs and the size of the population. It is advisable to focus efforts to control reproduction on those individuals or groups in the dog population identified as the most productive and the most likely to be the sources of unwanted and stray dogs, to ensure best use of resources. Methods of controlling reproduction will require direct veterinary input to individual animals. Involvement of both private and public veterinary sectors may be required to meet demand for services. subsidisation of sterilisation programmes by government or other organisations may be considered to encourage uptake. The control of reproduction is essentially the responsibility of owners and can be incorporated into education on responsible ownership. Methods for controlling reproduction in dogs include: surgical sterilization, chemical sterilisation, chemical contraception, separation of female dogs during oestrus from unsterilised males. Surgical sterilisation should be carried out by a veterinarian and include appropriate anaesthesia and pain management.

Any chemicals or drugs used in controlling reproduction should be shown to have appropriate safety, quality and efficacy for the function required and used according to the manufacturer's and Competent Authority's regulations. In the case of chemical sterilants and contraceptives, research and field trials may need to be completed before use.

Removal and Handling

The Competent Authority should collect dogs that are not under direct supervision and verify their ownership. Capture, transport, and holding of the dogs should be done humanely. The Competent Authority should develop and implement appropriate legislation and training to regulate these activities. Capture should be achieved with the minimum force required and equipment should be used that supports humane handling. Uncovered wire loops should not be used for capture.

Capture and Return, Rehoming or Release

Competent Authorities have the responsibility to develop minimum standards for the housing (physical facilities) and care of these dogs. There should be provision for holding the dogs for a reasonable period of time to allow for reunion with the owner and, as appropriate, for rabies observation.

Minimum standards for housing should include the following provisions:

- (a) site selection: Access to drainage, water and electricity are essential and environmental factors such as noise and pollution should be taken into account;
- (b) kennel size, design and occupancy taking exercise into account;
- (c) disease control measures including isolation and quarantine facilities.

Management should address:

- (a) adequate fresh water and nutritious food;
- (b) regular hygiene and cleaning;
- (c) routine inspection of the dogs;
- (d) monitoring of health and provision of required veterinary treatments;
- (e) policies and procedures for rehoming (adoption), sterilisation and euthanasia;
- (f) training of staff in safe and appropriate handling of dogs;
- (g) record keeping and reporting to authorities.

Steps should be taken to exclude dogs from sources of food (e.g. rubbish dumps and abattoirs, and installing animal-proof rubbish containers). This should be linked to a reduction in the dog population by other methods, to avoid animal welfare problems.

Control of Dog Movement – International (export/import)

There are hurdles on the international movement of dogs between rabies free countries and countries considered to be infected with rabies. It needs to prepare many protection for disease clear dogs within countries because of new comer dog species.

Control of Dog Movements – within Country (e.g. leash laws, roaming restrictions)

Measures for the control of dog movement in a country are generally invoked for the following reasons: for rabies control when the disease is present in a country, for public safety reasons, for the safety of “owned dogs” in an area or locality when a stray dog control programme is in place and to protect wildlife and livestock. It is necessary to have a regulatory framework and a national or local infrastructure comprising

organisation, administration, staff and resources to encourage the finders of stray dogs to report to the Competent Authority.

Regulation of Commercial Dog Dealers

Dog breeders and dealers should be encouraged to form or join an appropriate association. Such associations should encourage a commitment to the raising and selling of physically and psychologically healthy dogs, as unhealthy dogs may be more likely to be abandoned to become part of the stray population. They should encourage breeders and dealers to provide advice on proper care to all new owners of dogs. Regulations covering commercial dog breeders and dealers should include specific requirements for accommodation, provision of suitable food, drink and bedding, adequate exercise, veterinary care and disease control and may require breeders and dealers to allow regular inspection, including veterinary inspection.

Reduction in Dog Bite Incidence

The most effective means of reducing prevalence of dog bites are education and placing responsibility on the owner. Dog owners should be educated in principles of responsible dog ownership. Legal mechanisms that enable the Competent Authorities to impose penalties or otherwise deal with irresponsible owners are necessary. Mandatory registration and identification schemes will facilitate the effective application of such mechanisms. Young children are the group at highest risk for dog bites. Public education programmes focused on appropriate dog-directed behaviour have been demonstrated to be effective in reducing dog bite prevalence and these programmes should be encouraged. Authorities should seek advice from dog behaviour experts in developing dog safety education programmes.

Euthanasia

When euthanasia is practised, the general principles in this control measure should be followed, with the emphasis on using the most practical, rapid and humane methods and ensuring operator safety. Regardless of the method used, it is important to minimise distress, anxiety and pain by ensuring that operators are appropriately trained.

2.6 Human Health Risks and Free- Roaming Dogs

Rabies

Free-roaming dogs who suffer from disease and overpopulation pose risks of zoonoses, contact injuries, and environmental pollution to human populations . Rabies is the most lethal of canine transmitted diseases. Despite the development of a rabies vaccine more than a hundred years ago, WHO (2004) reports that half of the world's human population is at risk for rabies. Every fifteen minutes one person dies from rabies, and three hundred are exposed to the disease. Ninety-nine percent of rabies deaths take place in developing countries (WHO, 2004). Fifty-six percent of rabies deaths are in Asia and 44 percent in Africa. Rabies mortality ranges from 0.001 per hundred thousand in the United States to eighteen per hundred thousand in Ethiopia, with mortality levels of 0.01 in South Africa, 0.47 in Thailand and Vietnam, 0.57 in Sri Lanka, 1.75 in Bangladesh, and 2–4 in India. Bangladesh, India, and Pakistan are among the countries with the highest incidence of rabies, and half of all human rabies deaths occur in India (WHO, 1996). Dogs are the main rabies vector in Africa and Asia and younger dogs pose a greater bite and rabies risk. A study in Thailand found that 62 percent of rabid dogs examined are younger than one year old .The American studies have found that younger dogs are more likely to bite and their bites are more severe (WHO, 2001).

Male dogs are responsible for 59-70 percent of bites .The rabies virus is more prevalent in male dogs. Bite rates and rabies fatalities between female and male dogs likely stem from the fact that canine aggression is hormonally related. Unneutered males have particularly high bite rates. Only 3 percent of rabies deaths are reported in developing countries. Rabies is underreported because patients seek treatment from traditional healers, causes of death are often not reported to central authorities, and rabies may be unrecognizable to medical staff without laboratory confirmation .An Indian household survey found that only 36.4 percent of residents said they would visit a doctor if they were bitten by a dog (Cleaveland, 2002).

To compensate for underreporting of rabies, some researchers use dog bite statistics to predict numbers of rabies deaths. Using a dog- bite probability model, 55,270 deaths per year or 1.38 deaths per hundred thousand people are predicted .These fatalities include 19,713 deaths in India, 2,336 in China, 9,489 in other parts of Asia, and 23,705 in Africa. Eighty-four percent of rabies deaths are in rural areas. In India there are an estimated 2.49 deaths per hundred thousand people in rural areas, compared with 0.37 deaths per hundred thousand people in urban areas. In Africa there are 3.60 deaths

per hundred thousand in rural areas, compared with 2.00 per hundred thousand in urban areas (WHO Expert Consultation On Rabies, 2004).

Poverty is also associated with rabies vulnerability. The risk of canine rabies in Mexico is greater in lower- income areas. Poor children also face great risk. Children under the age of fifteen comprise 40–60 percent of rabies victims. Half of the world's malnourished children live in rabies-endemic areas. At the same time, rabies is 100 percent preventable for both humans and dogs. Deaths occur when dog bites go unreported, unrecognized, untreated, or are discovered too late. The lack of awareness about rabies among the public, health practitioners, and authorities, the shortage of rabies immunoglobulins and funding for modern vaccine and the lack of priority deteriorate canine rabies pre-control. As a result of improvements in post-exposure treatment, rabies deaths did decline in the 1980s and 1990s. The rabies situation in Sri Lanka worsened after the 2004 tsunami because of increases in the number of ownerless dogs. The Philippines also has seen an increase in rabies deaths (WHO Expert Consultation On Rabies, 2004).

Difficulties in controlling the spread of rabies have been associated with the migration of people and dogs from infected areas. WHO (2004) attributes the spread of rabies to the growth of dog populations in sub-Saharan Africa associated with human population growth and movement. Movement of infected animals into new areas produces outbreaks.

Other Canine Transmitted Diseases

Free-roaming dogs are associated with a variety of other bacterial, viral, and parasitic infections that may pose a risk to humans. Echinococcosis and toxocariasis are among the most prevalent of these health hazards and often occur in low- income areas. Echinococcosis (hydatid disease) is a common parasitic infection in dogs in developing countries that results from improper livestock slaughter practices. Sheep, goats, camels, cattle, pigs, and horses serve as intermediate hosts .Dogs contract echinococcosis by consuming the offal of infected livestock near slaughterhouses or areas of home slaughter. Young dogs (ages three to twenty-five months) and female dogs are more likely to be infected with echinococcosis .In endemic areas, 1–40 per- cent of cattle, 1–80 percent of sheep, and 0.2–50 percent of dogs may be infected .The disease spreads to humans through ingestion of dog feces. Echinococcosis can cause serious illness or death. The disease is most prevalent in the Middle East and North Africa, Western and

Central Asia, the Mediterranean, and sheep-rearing areas in South America and Australia. The highest prevalence of echinococcosis is found in Tibetan populations in Sichuan Province, China. In endemic areas, 2–20 people per hundred thousand contract echinococcosis. In hyper-endemic areas, up to 12 percent may be infected (Meslin, 2000).

Toxocara canis is a common dog roundworm that is spread indirectly through dog feces. Analysis of dog fecal samples revealed toxocara infection rates of 36 percent in Pretoria, South Africa; 19 percent in Jordan; 13.5 percent in Santiago, Chile; and 10.5 percent in La Plata, Buenos Aires. Dog infection rates range from 3.5 percent in adults to 79 percent in puppies. Puppies often acquire the disease through their mothers. *Toxocara* eggs do not become infectious until three weeks to several months after their introduction to the environment and infectious eggs can survive up to a year. The disease is transmitted through contaminated soil and unwashed hands (Meslin, 2000). Children ages one to three are especially sensitive to exposure.

Improved hygiene, public education, removal of feces, enhanced health of animals, and reduction in free-roaming dog populations can significantly reduce disease transmission of both echinococcosis and toxocariasis from dogs to humans. Reduction in the proportion of puppies in the population also helps to control toxocariasis spread.

2.7 Stray Dogs Control Management by Different Countries

Bulgaria

Up to the end of 2005, catching stray dogs, offering the ones caught for adoption and possible euthanasia of those not adopted successfully. Since the beginning of 2006, the overall policy has been changed by avoiding euthanasia and by a joint programme with the 'Four Paws' foundation to catch and neuter stray dogs, offer them for adoption and to release those not adopted at the places where they were caught. Also, The Animal Protection Act of 31.01.2008 has enacted. A new obligation on municipal mayors making them responsible for ensuring and running appropriate facilities and making them operational as dog shelters where stray dogs should be accommodated and further nurtured, as necessary.

Major causes of stray dog problems in Bulgaria can be seen as the following-the rapid increase of town populations, the drastic rise in the number of home pets kept under inappropriate conditions, the specifics of town environments making it easier to find food and asylum, the absence of adequate controls on domestic dogs, throwing out 'domestic

dogs' and enabling them to migrate from rural villa zones into the towns, in order to get food and the last one is abandoning animals due to lack of capacities to care for them.

By undertaking Municipal programmes for controlling stray dog populations in accordance with the Animal Protection Act, including: constructing and operating animal shelters at the municipality level, neutering and freeing dogs of parasites, well communicated offers of dogs for adoption, releasing the non-adopted dogs where they were caught, keeping alive the task delegated to municipalities and relevant animal welfare (AW) NGOs to ensure relevant immuno-prophylactic activities.

As a successful outcome, Animal Protection Act is well applied in the big towns of Bulgaria (Sofia, Burgas, Ruse, Dobrich, Varna, Vidin and Shumen), where substantial drops in stray dog populations has been observed. These towns might also be highlighted as examples of very good and close co-operation between municipal bodies and relevant AW NGOs. Between 60 and 70% of the municipalities in the country have their approved programmes for controlling stray dog populations. Since the start of 2010, the National Electronic Database registered dogs has been operational and ensures all the necessary means to establish and keep the national register of domestic dogs, and thus to improve substantially all the necessary controls on both domestic and stray dog populations. According to the Statistical data on stray dogs, there were 98,350 stray dogs up to 2006, 69,560 stray dogs at the beginning of 2008, 43700 stray dogs exist at the end of 2009 but there is 43,700 stray dogs at the end of 2009 (by municipal shelters only). Totally, 9,892 neutered and released stray dogs were made during mission and 487 successfully adopted.

Because the government focuses on ensuring and constructing all the shelters needed, accommodating and neutering, adoptions of dogs, they successfully control the stray dog populations. In addition, The National Veterinary Service performed well the overall supervision of implementation of all programmes for controlling stray dog populations that are to be implemented in the municipalities concerned.

India

With an estimated population of twenty-four million dogs, India has been the site of pioneering CNR (Control, Neuter, Release) programs. ABC (Animal Birth Control) programs were introduced following WSPA (World Social Protection for Animal) and WHO publication of Guidelines for Dog Management, which addressed the ineffectiveness of capture and kill as a dog-control strategy. According to WHO (2004, 54), the goal of ABC programs is to “reduce dog population turnover as well as the

number of dogs susceptible to rabies and limit aspects of male dog behavior (such as dispersal and fighting) that facilitate the spread of rabies.”

ABC programs in India were launched in response to the use of strychnine poisoning and electrocution as the dominant animal-control strategies (Help in Suffering 2003). In 1992, New Delhi’s court required that ABC programs replace cruel and ineffective methods of dog control. A pilot program by Help in Suffering (HIS) in 1994 and 1995 demonstrated the effectiveness of CNR in several Jaipur districts. The program then expanded to all of Jaipur. ABC programs have begun in Bombay, Delhi, Calcutta, Madras, Bangalore, Hyderabad, Uidapur, and Jodhpur. The Jaipur program has developed new techniques for counting street dogs and for the capture and return of such dogs.

For the ABC program, HIS (2003) selects an area of the district, subdivides the district, and establishes a quota for the number of dogs to be captured in each area. Before working in the area, HIS informs people about the ABC program, what will be done to the dogs, and the benefits of the program. Staff then travel through the areas capturing as many female adult dogs and older puppies of both sexes as possible. With the exception of puppies, male dogs are excluded from the program. Sterilization of female dogs is seen as more cost effective, since one male dog can impregnate multiple females. In addition, there is a belief that intact male dogs are more territorial, which will prevent immigration of new dogs into territories. Puppies under three months also are not captured. Dogs are captured in the early mornings and early evenings by hand or with sacks and hoops. Staffs receive incentives to encourage high catch rates and capture of sick dogs beyond their quotas. The dogs are then transported to the clinic.

At the clinics, the dogs rest for twelve to twenty-four hours, and food is withheld from them overnight. Anesthetized female dogs are spayed using the keyhole flank procedure. Anesthetized male dogs are castrated. All dogs are vaccinated and identified with individualized tattoos and an earmark. After surgery a veterinarian determines which dogs are ready for release and which need to stay longer. The average release time is 3.79 days for females and 3.25 days for males. The dogs are then returned to the areas where they were captured. Two dogs are released at a time to minimize problems among the dogs and between the dogs and the public. Approximately 10 percent of the dogs brought into the shelter are euthanized because they are terminally ill, badly injured, too aggressive, or suspected of being rabid or having come in contact with another rabid dog (Humane Society International, 2005).

Help In Suffering (2003) has sterilized and vaccinated 68 percent of the dogs in the population and has performed more than twenty-three thousand spay-and-neuter procedures. While there has been some opposition to the capture of dogs and to their return, the program generally enjoys widespread public support. WSPA also evaluated the Jaipur program recently. WSPA found that, while there was a relatively rapid increase in the proportion of females sterilized (10–60 percent over the first three years), the increase over the next six years (to about 75 per- cent sterilized) has been much slower. As a result of the ABC program, the dog density also declined by one third between 1997 and 2002. However, these decreases have not continued. The possible addition of dogs to the population from the reproduction of dogs whose owners have kept them on private property to avoid ABC capture, inadequate ABC coverage in some areas, and migration or acquisition of dogs from outside of the district may have prevented further population declines. Higher reproductive and pup survival rates among dogs in protected environments also may contribute to higher than expected population levels. Among the challenges, the Jaipur program has faced the difficulty in getting commitments from municipal authorities to refrain from capturing or killing dogs (Humane Society International, 2005).

Municipal officials receive pressure from residents who see dogs as a nuisance and fear rabies. Officials also are concerned that CNR success will result in reductions in animal-control jobs. The absence of information on street dog behavior and lack of trained resources, staff, equipment, and medical supplies also have been problematic. HIS had initial difficulties in identifying Indian veterinary surgeons to participate in the program because few local veterinarians have experience or training in small animal medicine. In addition, problems with other non- governmental organizations inflating their sterilization numbers have undermined the reputation of ABC programs. Nonetheless, other cities in India have also reported success with their ABC programs. Chennai has recorded a substantial decline in human rabies cases since it launched its ABC program in September 1996 (Nolen, 2006).

Thailand

In 1995 Thailand set the goal of being rabies free by 2000 .Under Thailand’s 1992 Rabies Prevention Act, every owned dog must be vaccinated at two to four months of age and receive annual vaccinations . Vaccination and sterilization campaigns focused on community dogs who live around temples and schools. Methods of sterilization included

injections of medroxyprogesterone acetate, surgery, and use of natural plant hormones. Outreach to the medical community and local residents encouraged bite victims to seek treatment. Mass vaccination campaigns achieved 53 percent coverage. Although rabies declined from two thousand cases in 1993 to fewer than twenty in 2003, vaccination levels of 40–70 percent in parts of the country are viewed as inadequate, particularly in view of the migration of infected dogs from suburban and rural areas. Moreover, stray dog populations tripled between 1992 and 1999 (WHO, 1996 september).

With a population of six to ten million dogs, Thailand implemented a new program of capture, neuter, vaccination, and return in 2002. This program has been the target of criticism because it is limited to Bangkok and lacks adequate financial and staffing resources. Programs in Thailand faced difficulties in hiring veterinarians who are trained in small-animal surgery. When they could not hire enough veterinarians for surgery, Thailand officials built kennels to house captured dogs. This capture strategy has only served to facilitate migration of infected and intact dogs into new territories. Targeted CNR campaigns in isolated geographic areas such as southern Thailand are viewed as more viable (Denduangboripant, 2005).

Island Nations

CNR programs have operated successfully in island areas, including Abaco, Bali, the Galapagos, and Sri Lanka. In Abaco, an island in the Bahamas, a spay/neuter incentive program (SNIP) was launched in 1999 with support from HSI and the Pegasus Foundation. In 2000, after the success of the initial program, SNIP and Abaco Animals Require Friends (AARF) initiated “Project Potcake” as a CNR program. Most “potcakes” (local dogs) are unowned, but these dogs are recognized and supported by specific neighborhoods.

For Project Potcake, two local veterinary clinics ran eight spay- and-neuter programs for four to six days each. Volunteers canvassed neighborhoods and transported dogs to the clinics, where the animals were sterilized for free. The program focused on female dogs, but also included male dogs and cats. Project Potcake exceeded its target goals. After the program had successfully reached both owned and socialized dogs, it attempted without success to use baited traps to capture less accessible dog. At the clinics dogs received additional medical treatment, including antibiotics, fluid replacement, and diagnosis of skin conditions.

Initially, the program offered incentives of \$10 for each male dog brought in and all cats and \$15 for each female dog. Incentives were important in overcoming initial community suspicion, but could be decreased or eliminated as the program gained community support. Transportation for the dogs to and from clinics was viewed as more important than the financial incentive (HSI, 2001).

The Abaco program was considered a success: the proportion of owners with sterilized dogs increased from 62 percent before the four clinics to 76 percent after the clinics. Obstacles to the program have included the lack of owner participation and the numbers-driven program approach that on occasion has resulted in more captured dogs than could be sterilized (HSI, 2001).

In Bali, an island with 3,151,000 people, there are an estimated 550,000–600,000 dogs (18–18.5 dogs per hundred people). Eighty-five percent of these animals are street dogs. Since its inception in 1998 by the Bali Street Dog Foundation (Yayasan Yudisthira Swarga [YYYS]) the program has sterilized 13,790 dogs and provided veterinary care to an additional 31,718. YYS started with a “catch, treat, and release” program to treat skin diseases, parasites, and wounds. YYS now operates both mobile and fixed clinics; the former comprise two doctors, one dogcatcher, and a driver/field assistant. The “M.A.S.H.- style” surgery unit goes out four days a week, and the CNR program is directed at both female and male dogs. Before the mobile clinics began to visit villages, about 24 percent of the dogs were sterilized. After seven years of operation, an estimated 51 percent of dogs are now sterilized. Of the spay-and- neuter surgeries, 74 percent are performed by the mobile clinics .It is evident that the increased proportion of sterilized dogs cannot be due solely to YYS activities. However, YYS has stimulated a change in community and veterinary behavior such that sterilization is now more common have been a major focus of YYS’s work. WSPA initially trained staff in spay procedures using a spay hook. Since then YYS’s fixed clinic has become a teaching facility for local veterinarians and veterinary students. Regular seminars are held in conjunction with the Indonesia Veterinary Association, and YYS offers internships for veterinary students and hosts visiting veterinarians from other countries. YYS also runs “kindness” classes for children and undertakes other public education efforts.

To stop the poisoning of dogs and cats by the Galapagos National Park Service (GNPS), Animal Balance introduced CNR to the Galapagos Islands. The local government provided clinic space, and municipal representatives did an initial door-to-door survey to inform residents about the upcoming spay-and-neuter program. A list of

interested residents was given to Animal Balance, which then invited people to bring their dogs and cats to the clinic, and GNPS provided vehicles to transport the animals. Additional door-to-door canvassing covered every house on several of the islands to encourage participation. Radio commercials publicized the program and provided public education on dog care. Dog training and school-based humane education programs also supplemented the treatment of dogs and cats (Animal Balance, May 2005).

Before the Animal Balance program, no veterinary services were available on the islands for dogs and cats. Clinic equipment was brought to the Galapagos, and volunteer veterinarians from abroad were recruited to perform surgeries in the clinics. Animal Balance had run seven campaigns by 2006. In 2004 initial clinics were held on Isabela Island for six weeks and on Santa Cruz Island for two weeks. A four-week clinic was held on San Cristobal Island in 2005, along with another week-long clinic on Santa Cruz Island. In 2006 simultaneous campaigns were held on all three islands for nine days. Through these campaigns Animal Balance has sterilized 2,601 dogs and cats. After 2007 municipal administrators were to assume responsibility for the project.

The program has faced two recent challenges. Animal Balance (2006) is working with quarantine officials to contend with importation of purebred dogs to the islands, which could compromise vaccination and sterilization coverage. The organization also forged a compromise in response to the demand for puppies on San Cristobal Island. Previously hunters had refused to have their dogs sterilized. Animal Balance agreed to rescue and make available for adoption excess puppies that otherwise would be killed by hunters.

CNR programs also have been implemented in rapid response to natural disasters that precipitate fear of rabies. After the huge tsunami in 2004, the Sri Lankan military threatened to eradicate street dogs to prevent rabies outbreaks. The tsunami had displaced community dogs from familiar neighborhoods, making it difficult for them to locate food and shelter. Sri Lankan officials agreed to suspend plans for shooting and poisoning dogs after HSI (Human Society International) made a commitment to launch a CNR program to vaccinate and sterilize free-roaming dogs. Working with a Sri Lankan animal hospital, veterinarians and other volunteers from HSI, YYS, and The Humane Society of the United States' Rural Area Veterinary Services set up thirteen successive field clinics across the country. In addition to capturing, vaccinating, neutering, and returning community dogs, the field clinics encouraged owners to bring in their pets. Field clinics sterilized and vaccinated an estimated 70–90 percent of the dog population at

each site. In total 1,430 dogs were treated between January and May 2005. The program developed strong community support, helped improve attitudes toward animal welfare, and increased appreciation of the need for veterinary services (Humane Society International, 2005).

2.8 Review on Previous Studies

Ma Su Lynn Myat Swe (2013) analyzed some epidemiological features of rabies in Myanmar for preventive and Tropical Medicine. The Household Survey was conducted to the Thingangyun Township during the period 2012 April to 2012 June. The main objectives of the study was to purpose the destruction of stray dogs is more effective, practicable and a better way of preventing rabies than giving PEP to those who are exposed to rabid dogs. According to this study, it is found that lack of knowledge concerning the danger of animal bite and belief that rabies can only occur by the bite of rabid dog contribute to under reporting by the public.

CHAPTER III

STRAY DOG POPULATIONS CONTROL IN YANGON

3.1 Profile of Yangon City Development Committee

Yangon City Development Committee is the administrative body of Yangon, the largest city and former capital of Myanmar (Burma). It consists of 20 departments, with headquarters in the Yangon City Hall. The committee's chairman also acts as the city's mayor.

On 14 May 1990, the Yangon City Development Law formally established the present incarnation of YCDC, delegating wide responsibilities to this body, including city planning, land administration, tax collection, and development. However, the YCDC is also responsible for duties stipulated in the 1922 Rangoon Municipal Act.

The YCDC is technically independent of the government, and raises its own revenues through tax collection, fees, licenses and property development. To maintain and develop the city within its territory, YCDC carries out the following duties and responsibilities: drawing and implementing land policies, administration of lands, developing and enforcing, planning controls, protection of heritage buildings, regulation of construction sites, construction and maintenance of parks, gardens, playgrounds, recreation centers, promoting events and exhibitions to enhance the work of YCDC, providing parking spaces for vehicles and reducing traffic congestion, construction, maintenance, upgrading and administration of markets, regulation, control and healthcare for animals and pets, including the inspection of meat and fishery markets and supervision of slaughter houses, practice of environmental protection and waste management, including collection and treatment of waste, management of landfills, prevention of water and air pollution, regulate and issue licenses for ferryboats and supervision of ferry businesses, licensing and regulating trading warehouses and pawn shops, ensuring the safety of the citizens through prevention of natural disasters and management of the fire services, issue licenses regarding slow moving vehicles such as tricycle rickshaws, providing water supply and sanitary systems, supervision of

cemeteries and incinerators, and overseeing the land use of cemetery compounds and then doing other beneficial municipal works, such as environmental services.

There are following twenty departments under the supervision of YCDC. They are-the Administration Department, Budget & Accounts Department, Work Inspection Department, Co-ordination Department, Assessors' Department, Revenue Department, Markets Department, Veterinary & Slaughter House Department, Pollution Control & Cleansing Department, Engineering Department (Roads & Bridges), Engineering Department (Buildings), Engineering Department (Water & Sanitation), Motor Transport & Workshop Department, Central Stores Department, Playgrounds, Parks & Gardens Department, Security & Disciplinary Department, City Planning and Land Administration Department, Health Department, Public Relations and Information Department and then Production Department.

In Myanmar, according to the Burma Municipal Act of 1874, the City of Yangon Municipal Act 1922, the YCDC Law 2003 and the latest YCDC law 2018, YCDC has the authority to bill the tax on land, vehicles and pets in around Yangon Region. Out of twenty departments of YCDC, The Veterinary and Slaughter House Department is the one and only focal responsible department to carry out the management and control upon Animal related matters including animal husbandry and slaughtering. For the controlling boom amount of stray dogs within Yangon region, YCDC is carrying out by using strategic methods starting from 2013, although dreadfully unsystematic killing method is the only used to control mass amount of stray dogs till 2012.

3.2 The Operation System of the Veterinary and Slaughter House Department

Before the 1885, the veterinary and slaughter house department was established under the supervision of Yangon City Development Committee (YCDC). Starting from 1887, the slaughtering activities have been starting by building boar slaughter house at Sin Malite and Bull Slaughter house at MaOuu Kone. After that treatment and prevention sub-department was established as west and north treatment center for livestock and pets. On 1st April 2001, the treatment and prevention sub- department as north and south treatment center. Starting from 2014, the animal registration for ownership dogs is operated by their different living districts. According to 2018 Dogs Registration Data, only 6000 Dogs populations are registered, out of 250000 in totaled approximately. In doing registration, the recommendation letter and approval notes from township

administration or ward administration official is needed to prove the responsible ownership by the individuals.

Functions and Duties of the Department are as follows:- (1) Prescribing the disciplines, scrutinizing, permitting, inspecting and supervising on keeping, breeding, herding, producing, selling, carrying and moving of animals in City boundary, (2) Inspecting, registering, vaccinating, prohibiting and taking action in accordance with the existing law on pet raising in City boundary, (3) Inspecting, permitting, prohibiting, cancelling the license if there is any offences from notified disciplines, removing and taking action in accordance with the existing law if necessary on livestock farming in the townships where the livestock breeding are allowed, (4) Building and establishing the animal pounds to capture and detain the stray animals and taking action in accordance with the existing law, (5) Opening, administering and supervising the cattle sale markets, (6) Laying down the disciplines, scrutinizing, permitting, inspecting and supervising the selling of pet fishes and animals in City boundary, (7) Building and establishing the Committee owned abattoirs, giving permission to build abattoirs privately, allowing to produce and process the meat, permitting the meat production within township depend on the transportation and prescribing the disciplines concerning those tasks, (8) Ante-mortem inspecting of animals which may prior to slaughter whether they have sound health or not, allowing to store and slaughter abide by the disciplines, post-mortem inspecting of slaughtered animals whether they are free from infectious diseases or not and inspecting the meat whether they are comply with hygienic and suitable for human consumption or not, (9) Issuing the disciplines and permitting the live poultry selling, inspecting, condemning the unhygienic matters and supervising the disease controlling measures in the live poultry markets which owned by committee, (10) Conducting the disciplines, permitting the poultry meat productions and processing, inspecting which may lead to comply with clean, fresh and hygienic procedures, prohibiting, condemning and taking action if there is any irrelevancy in City boundary, (11) Observing, arresting and taking action on illegal meat producing, slaughtering and killing of animals in City boundary, (12) Notifying the disciplines, inspecting, allowing importing and carrying of meat into the City boundary from outside, prohibiting, arresting and taking action in accordance with existing law on illegal importing and carrying of meat from outside, (13) Imposing the Disciplines, allowing to sale, inspection and supervising on meat and fish selling in Committee owned markets and other places, (14) Performing the preventive measures, cooperating and coordinating with related departments and organizations for health and

prevention of infectious and zoonotic diseases,(15) Eliminating the stray dogs, rats and crows which are not only harmful to public health but also destroy the green, clean and beauty of environment, (16) Removing and eliminating with appropriate method to any infected animals which are harmful to animal health, disease prevention and public health, (17) Opening and establishing the veterinary clinics, inspecting and supervising the private veterinary clinics for animal health, development and disease prevention in City boundary,(18) Supervising the person who get permit from local authority to kill the livestock animals for religious and other purposes except from distribution and selling, to perform in accordance with the prescriptions in City boundary.

Concerning with the public management issues, Stray Dog Populations control becomes the one of main duties of the Veterinary and Slaughter Department under YCDC. Under 1922 Yangon Municipal Act and 2018 YCDC Law, the department is responsible to eliminate dangerous stray dog populations near public areas such as schools, markets, hospitals and university. In the 2018 YCDC Law, the committee' role and function on public health and mitigation of hazardous diseases are added in chapter 20. In the Section 177, Chapter 12, the elimination of dangerous animal species in public areas is eligible to be terminated by the committee. The Chapter 22, Subsection 218 to 221 has special purposes for stray dog management. Among them, the Section 219 of chapter 22 clearly states the role of committee on the ownership for pets and livestock, the storage and registration regulations. In the Section 321 of Chapter 29; Bills and Penalties section, the prohibition and bills concerning to the animals residing in the public area. The restriction on shelters and illegal veterinary care center, the illegal breeding of pets and livestock, the restriction on feeding in public areas are constructed in the law. For the feeding restriction, the subsection 25 of section 322 describe those will be penalized who feed the stray animals in public area from fifty thousand to one million or three months imprisonment or both will be billed.

Before 2014, the department only uses euthanasia method by spraying poison to reduce dog populations. After 2014, The Department practices most of the OIE Terrestrial Animal Health Standard Guideline and follows their suggestions. According to the OIE Terrestrial Animal Health Standard Guideline, there are eleven ways to control stray dog populations and rabies as a following: (1) Education and legislation for responsible ownership, (2) Registration and identification of dogs (licensing), (3) Reproductive Control, (4) Capture and return, rehoming or release, (5) Environmental Controls, (6) Control of dog movement- international, (7) Control of dog movement –internal,

(8) Regulation of commercial dog dealers, (9) Reduction in dog bites incidence, (10) Removal and handling, (11) Euthanasia.

3.3 Stray Dog Populations Control Practices of YCDC

As the veterinary and slaughter department of YCDC, the stray dog populations control are undertaken by the six methods of OIE Terrestrial Animal Health Standard Guideline.

1. Reproductive Control

In Reproductive Control method, ABC method (Animal, Birth, Control) are applied by Sterilization or Castration to the canine populations. According to the Budget funding, it is made with free of charge by officials and volunteer veterinarians. With reproductive method, the female dog costs 25000-35000 and the male dog costs 10000-20000 for their operation. In Yangon, Stray Dog Population Problems become public health and management related in every wards and townships. Starting from 2015, YCDC cooperated with Infinity Vet Myanmar, volunteer organization formulated with freelance veterinary from Myanmar and doing ABC birth control pilot tests in Downtown areas. In 2019 May, World Veterinary Service and Myanmar Veterinary Association have cooperated to support YCDC in doing Animal Birth Control projects in Hlaing Township.

2. Promoting responsible ownership

In order to promote responsible ownership, it need to have awareness programs through media, promote legally registered own dogs and dogs show programs although ABC programs and CNR programs are normally used as the most effective ones in stray dogs controlling, for developing countries, the promoting responsible ownership the only one cost effective one for the public and the animal welfare.

3. Catch and Removal

By collaborating with public, dangerous canine populations are caught within public areas.

4. Sending to government owned shelter

Wild Canine populations are kept in the government owned shelter at Hlaing Tharyar through their life time. Also, the YCDC manage the limited number of stray dogs population to the sanctuary shelter and Monastery.

5. Poisoning (euthanasia)

As the burst canine populations are demanded to do poisoning from time to time, the officials have to incorporate in this resolution. According to the random survey census 2010 by YCDC, there will be 20 to 25 increasing rate, estimated two hundred thousand to three hundred thousand canine populations in Yangon are existed nowadays. Basically, seventy percent of the estimated total canine populations are stray dogs in Myanmar. The ratio of stray dogs to person is twenty two to one and it needs to make ten to one in general. As a developing country, the best method is killing the extent amount and to control the limited populations by CNR methods and ABC methods is the best option as in Sri Lanka case.

6. Environmental Control

According to the Ministry of Health and Sport, the dog bites incidents in Yangon Region as the following:

Table 3.1 Dog Bite Incidents 2016 to 2018

Year	Numbers of Dog Bite Incidents		
	All Region	Yangon Region	Remark
2016	22389	8845	Second Highest
2017	180367	35839	Highest
2018	192265	38186	Highest

Source: Ministry of Health and Sport Dog Bites Data, 2018

According to the Table 3.1, the dog bites are most occurred within Yangon region. The crowded urban populations are the main lever for incredible dog bites incidents. During 2016, the sufficient reported dog bites cases are unlikely to be counted. But during 2017 to 2018, people focus on dog bites incidents as they are supported key elements to control the stray dog populations within the community. For the rabies control, in 2017, the ARV distribution reached to the high amount when compared to the reported dog bites. ARV distribution for the whole country by Ministry of Health and Sport was 454846 in total and the most distribution areas are as following: Ayeyarwaddy (33000), Bago (55600), Mandalay (70000), Yangon (124745), Magway (21100), NayPyiTaw

(20200), Mon (24000). Spending 5.4 Billion become extensively reduce reported rabies victims. Although different kinds of vaccinations can affect the protection, there is no way to protect dog bites. Starting from 2019 April , the dog bite center is started to open in Yangon General Hospital to cure the patients as 4600 patients reached to YGH in 2018.

According to the YCDC, the stray dog population control are made by using vaccination, Sterilization or castration method, remove and replaced method and lastly euthanasia method.

Table 3.2 Stray Dog Populations Control by Vaccination Method

	2014-2015		2015-2016		2016-2017		2017-2018	
	Number of Stray Dogs	Percent (%)						
East District	200	20%	167	10%	202	8%	86	3%
West District	294	21%	666	40%	1188	47%	1123	39%
South District	210	22%	466	28%	556	22%	864	30%
North District	388	37%	366	22%	581	23%	806	28%
Total	1050	100%	1665	100%	2528	100%	2880	100%

Source: YCDC Stray Dog Populations Control Data, 2018

In Vaccination method, both anti-rabies vaccination for dogs and birth- control vaccination are calculated together. It can be seen that the percentage of vaccination coverage according to each district. Out of the four districts, The Vaccination activities are mainly conducted in West District including Ahlon, Kyautdata, Sanchaung, Seikkan , Hlaing, Kamayut, Mayagone, Dagon , Bahan, etc. As the West District is the most urbanized and populated one and many public centers such as Yangon General Hospital, Yangon University, City Hall are existed. Becoming the urbanized one is strongly relatable to the greater stray dog populations. As food sources are abundant in that urbanized area, the key performers have to focus on controlling activities in West District than other areas. Comparing to the other control method, vaccination method is least used in Myanmar because of their expensive cost.

Table 3.3 Stray Dog Populations Control by Sterilization/ Castration Method

	2014-2015		2015-2016		2016-2017		2017-2018	
	Number of Stray Dogs	Percent (%)						
East District	418	17%	658	15%	683	12%	841	13%
West District	566	23%	1537	35%	1594	28%	2588	40%
South District	492	20%	1010	23%	1423	25%	1100	17%
North District	984	40%	1186	27%	1992	35%	1941	30%
Total	2460	100%	4392	100%	5692	100%	6471	100%

Source: YCDC Stray Dog Populations Control Data, 2018

In doing birth control to female dog, removing the whole uterus is the most convenience and cost-effective for the developing country. Out of four districts, the sterilization activities are mainly conducted in North and West districts including Hlaing Tharyar, Insein, Mingaladon, Ahlon, Kyautdata, Sanchaung, seikkan , Hlaing, Kamayut, Mayagone,Dagon , Bahan, etc. As North district is semi urbanized and West is fully urbanized, the effective way to control high breeding amount of stray dog populations within these areas is started to conduct. Although Hormonal Vaccination is another way to control birth rate, it is very costly and need more technical and human resources.

Table 3.4 Stray Dog Populations Control by Removed-Replaced Method

	2014-2015		2015-2016		2016-2017		2017-2018	
	Number of Stray Dogs	Percent (%)						
Mommy's heart Dog Shelter	50	21%	70	24%	84	23%	40	11%
Kindness Dog Shelter	-	-	45	15%	35	9%	45	13%
Paunggyi Sanctuary shelter	65	28%	89	31%	57	16%	60	17%
Paunggyi natural retreat	22	9%	40	14%	68	19%	82	24%
Hlaing Tharyar Shelter	100	42%	46	16%	-	-	54	16%
Hlekuu Sanctuary retreat	-	-	-	-	120	33%	65	19%
Total	237	100%	290	100%	364	100%	346	100%

Source: YCDC Stray Dog Populations Control Data, 2018

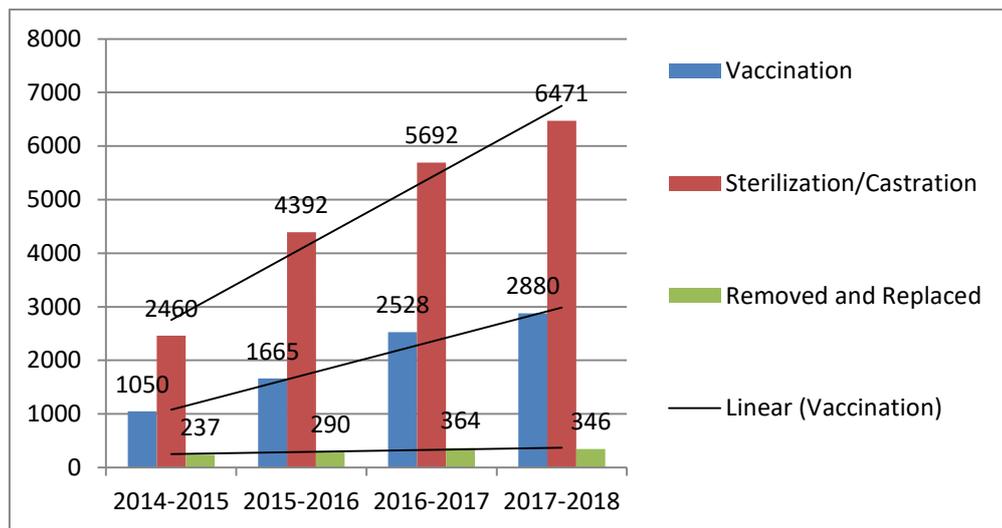
By removing some amount of Stray Dog populations to the government shelter at Haling Tharyar and other collaborated private dog shelters, YCDC tries to reduce stray dog populations since 2014.

Within Yangon Region, Stray dog populations control and anti-rabies vaccinating are made regularly free of charge by Infinity Vet Myanmar. It is established with the corporation of Myanmar Veterinary Association and Freelancer Veterinarians in Yangon.

There are registered private dog shelters in Myanmar. For example, Yangon Animal Shelter, Pearl Heart, Better life, Mya Thet Mon shelter and so on. Most are depend upon the donation of the public. The more canine population are reached to the private shelter, the more difficulty they faced. As the space and caring cost for one dog is \$10 per one week, the acceptable dog populations is very limited for the moment.

In the following figure 3.1, it can be seen that the statistical data of many control methods such as vaccination, sterilization and castration, replacing to shelter in all Yangon Region. Although it can be consider as relatively small amount of activities are performed, the key performers are increasingly practicing such efficient stray dog population controls activities year to year.

Figure 3.1 Stray Dog Populations Control by Vaccination, Sterilization and Removed- Replaced Methods



Source: Table 3.2, 3.3, 3.4

According to the Municipal Act 1922, the elimination of dogs by euthanasia method is the only way to control the population of dogs. As Canine populations give birth normally three times in each year and once they birth at least three to six pups, using poisoning method is only the short term solution will be made and for the long term, the other birth control methods are more suitable. Starting from 2014, YCDC reforms their control system. Instead of only using euthanasia, the other methods such as sterilization and vaccination programs are replaced. It can be seen that the following figure 3.2 shows how they manage to reduce the mass dog killing method. Still, as a developing country,

the scarcity of human and skill resources are the barriers to reject poisoning method. It is clearly identify the good prospect in controlling dog populations in near future.

Currently, only Model Dog Population Survey by YCDC are collected within Yangon University compound. According to the YCDC, there are 256 female dogs and 200 male dogs are lived. Only 56% male are castrated, while, 20% of female are sterilized. There is tendency to increase dog population sooner or later if not she-dogs are sterilized in this situation.

Table 3.5 Stray Dog Populations Control by Euthanasia Method

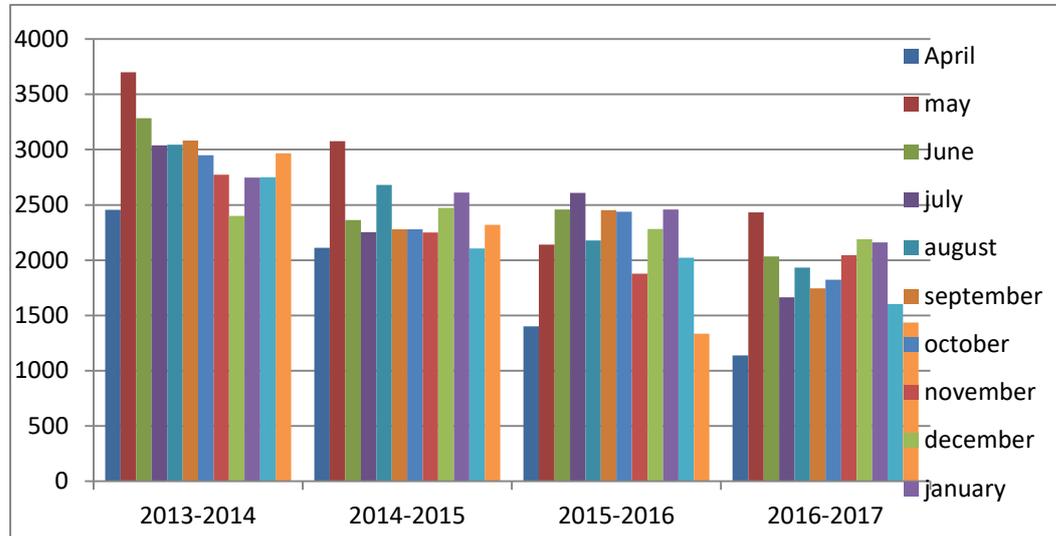
	Number of Stray Dog Populations Control				
	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
April	2455	2111	1401	1140	1841
May	3701	3076	2140	2432	1831
June	3285	2362	2458	2033	1740
July	3039	2252	2607	1663	1646
August	3044	2680	2177	1933	1930
September	3081	2279	2453	1745	1864
October	2950	2278	2439	1822	1239
November	2773	2249	1879	2044	1462
December	2400	2472	2281	2190	1548
January	2746	2611	2458	2161	1488
February	2751	2107	2022	1604	1457
March	2965	2320	1336	1436	1335
Total	35190	28797	25651	22203	19381

Source: YCDC Stray Dog Populations Control Data, 2018

Before 2014, over one hundred fifty thousand dog populations are terminated only using the poisoning method with deadly poison. After 2014, YCDC mainly started to implement the other control methods according to the OIE animal control guideline. According to YCDC 2013 and public voices, the committee has been reducing the killing amount from year to year. Within 2019, there is relatively small number of dogs are killed by euthanasia method. Instead, the key performers including YCDC, livestock and

veterinary department is trying to practice other efficient control methods by cooperating with WVS (World Veterinary Service).

Figure 3.2 Stray Dog Populations Control by Euthanasia Method



Source: Table 3.5 Stray Dog Populations Control by Euthanasia Method

According to the table 3.5, euthanasia method is mostly used in May, June, November, December in every single year in general. As dogs breeding seasons, it is likely to be used more than other months. Every Dog lover groups are blamed for using this killing method, as a developing control, killing certain amount to control the limited populations successfully is the general concept accepted by many veterinaries and researchers. It can be seen that there is progressive footstep in stray dog population controls as key performers is practicing other control methods while reducing euthanasia method.

3.4 Progressive activities Undertaken with Multi-Stakeholders

From the most occurrence of rabies disease in Southeast Asia to rabies free country, the national plan for rabies elimination on dogs roadmap is currently being formulated by cooperation with multi stakeholders like Mingalar Myanmar, Livestock Breeding and Veterinary Department under Ministry of Agriculture, livestock and Irrigation and Yangon City Development Committee as a supportive practices for stray dog problems in community. The general objective is to be able to eliminate rabies in Myanmar dog population by 2030. The specific objectives are to progressively build a

community of responsible pet owners and a proactive society, to strategically and effectively vaccinate dogs, diagnose rabies, conduct rabies surveillance, manage dog population, monitor and control dog movements and conduct priority research, to demonstrate strong leadership, foster healthy partnerships and coordination within the animal health sector and with other sectors, to secure a strong political support for National plan, to secure and sustain necessary resources including financial. With the support of OIE, OIE(STANDZ) and four paws international, the anti-rabies vaccination campaign was conducted at Nyaung Oo township, Lewei township and Hmawbi township during 2016, 2017 and 2018. In 2013, anti-rabies vaccines 200000 were donated by OIE for the pilot projects. In 2015, also 200000 vaccines were donated by OIE (STANDZ). In 2017, Four Paw International donated 50000 for the pilot projects. With the donated vaccination, in 2016, the very first pilot mass dog vaccination was conducted at Lewei Township to 35618 dog populations. As a second phase, in 2017, 27917 dog populations were injected. As a third phase, in 2018, estimated dog population 25618 were injected. The second pilot project was made in Nyaung U Township. In 2017, with the support of OIE (STANDZ), 16091 dog populations were injected anti-rabies vaccination. In 2018, 17408 canine populations were vaccinated in second pilot project at Naung U Township. As a third pilot project, 16443 dogs population were vaccinated in Hmabi Township. Because of the pilot projects were conducted, 80% of vaccine coverage can be made in targeted areas. As international well-trained vaccinators, dog catchers supported the projects, it has been fruitful outcomes for the country. Shared experience, one Health approach are assumed to be biggest achievements of these pilot projects.

CHAPTER IV

ANALYSIS ON THE STRAY DOGS CONTROL PRACTICES

In conducting of data, the research makes use of a set of survey questionnaires to create primary data. Each and every questions impart in both Key Informant Interview and Township Household Survey are designed to analyze the different perspectives and approaches on the Stray Dogs Control Practices in Yangon.

4.1 Survey Profile

This study is conducted between 2018 and 2019. The structure of interviewed questions are established in January 2019. The time interval for accomplishment of the interview and survey results came out in May 2019. In this study, it can be seen the key informal interview and township household survey are conducted.

For the Key Informant Interview, Government officials from key related machinery departments such as Yangon City Development Committee (YCDC), Ministry of Health & Sport, Department of Livestock and veterinary, Ward and General Administration Department, also, other multi- stakeholders such as Animal Protection Activist Groups, Private- Dog Shelter Owners, Technical Aids Association. For the township household survey, 200 households that can represent the whole population in San Chaung Township conducted to explore the deepen perception and attitude of public concerning with stray dogs existence and its control practices.

4.2 Survey Design

As presented in Chapter One, the research is conducted by qualitative and quantitative exploration on both Key Informant Person and General public living in Sanchaung Township.

Concerning to the KII interviews, the phenomenological research method has applied in collecting and interpreting data concerning the attitudes and perspective of Key Informant People. The involved officials and key multi-stakeholders voices are at the core of investigation that shed light on this phenomenon. The research questions are

constructed in such a way to investigate the current situations of controlling Stray Populations, and also, multiple perspectives and approaches upon Stray Dogs Populations Control Practices by YCDC in Yangon Region. Data collection system is carried out by using face-to-face interviews. Fifteen key stakeholders are carefully selected from seven key institutions: YCDC, Ministry of Agriculture, Livestock and Irrigation, Ministry of Health and Sport, General Administration and Ward Administration Office of North District, Mingalar Myanmar, Yangon Animal Shelter, Yangon Stray Dogs Lover Group and Golden Heart Dog-shelter. Audio Recording and notes taking tools are applied in conducting the KII interviews. Many interviewees who impart in KII interview can explain and give properly their perspectives and knowledge regarding to the current issues on Stray Dogs Populations Management, even they have given the additional information not including in study interview questions. They normally take 20 minutes to 30 minutes to finish the all questions. Although all of the questions conducted for KII interview are constructed in the form of quantitative, it can be seen that most of the KII interview results are analyzed similarly to the qualitative perspective by grouping similar opinions and presented the results with percentage.

For the Township Household based survey, the survey design is mainly constructed to analysis the attitude, perspective and knowledge upon stray dog population control activities led by YCDC. Among three wards of Sanchaung Township, the sample 200 households are carefully selected to explore the different people perception on stray dog populations and its management. As many debatable issues and different perspective within public on Stray Dogs existence, many counter questions and dislike behavior are faced when conducting eye to eye interview to households. This study has employed three areas on their inborn perceptions towards Stray Dog Existence and Stray Dogs Control Practices by YCDC. They are public mannerism towards Stray Dogs, their personal feelings towards Stray Dogs, their knowledge on management methods. Mostly quantitative questions are included to identify their attitude, knowledge and perspective identically with their answers. Also, some open-ended questions are constructed to explore their ideas freely.

4.3 Survey Result

Ideally, the survey questions for KII interviews are 15 questions and the township household question are total 18 questions including demographic questions. For KII interviews, the survey is designed to give resolutions, their internal constraints and

conflicts with public, also their perspective on people participation and eight significant answers are being selected as they can represent the purpose of study. For Township Household survey, almost all the answers are selected for this section. It is certain that also household survey result can support different point of views, different attitudes that may counter some weakness upon Stray Dogs Control Practices by Governmental Stakeholders, mainly YCDC and people living in Sanchaung Township. The divergent views of households and key stakeholders upon stray dog population control practices can be identified and analyzed. From the KII interview to township household survey, each responses are carefully counted and all results, diversify answers and opinions can be spotted in finding section.

4.4 Key Informant Interview Results

Qualification of Interviewees

The qualification of interviewees is presented in the following Table 4.1. Out of 15 Key Persons, 8 people (53%) are carefully selected from Key machinery Departments from government side. Another 47% are selected from multi- stakeholders, mainly from private institution associated in Stray Dogs Populations Management.

Table 4.1 Qualification of Interviewees

Particular	No of Respondents
Institution/ Department	
Director General (Veterinary and Slaughter House department)	1
Committee member 10 (Veterinary and Slaughter House department)	1
Assistant Director (Veterinary and Slaughter House department)	1
Director(Livestock and Veterinary Department)	1
Assistant Director (livestock and Veterinary Department)	1
Director General (Ministry of Health & Sport)	1
Superintendent (Dog bite Center Of Yangon General Hospital)	1
Ward Administration Department	1
Mingalar Myanmar	2
Owner of Dog Shelter (Yangon Animal Shelter & Golden Heart)	2
Chairman (Animal Protection Network)	1
Freelance Veterinary	2
Total	15

Source: Survey Data, 2019

Key Persons Perception on Public Knowledge and Participation Level

Table 4.2 Public Knowledge Level and Public Participation Level

Public knowledge level	No. of interviewee	Percentage (%)
strong knowledge	5	33
weak knowledge	10	67
Public Participation level	No. of interviewee	Percentage (%)
reliance only to Government	13	87
willing to participate	2	13

Source: Survey Data, 2019

The above table 4.2 shows the owned knowledge level of public on stray dog control methods assumed by the key interviewees. The strong or weak knowledge is assessed on how much practice the public know. If the key person thinks only one or two control methods are noticed by the public, the answer is counted as weak knowledge. If the key person assumes many practiced methods are noticed as a citizen, the answer is interpreted as strong knowledge. According to the KII Interview Result, 67% (10 officials) agreed that euthanasia might be the most well-known method to control and terminate the dog population for a decade within public. In this regard, public's knowledge is assumed as weak knowledge because they notice one only method according to the 67% of key interviewees response. 33% officials said that general public notice and aware many stray dog control practices in their community. In this regard, public's knowledge is assumed as strong knowledge because public notice many methods according to the 33% of key interviewees response. According to the above Table 4.2, it is found out that the public have weak knowledge on control methods practiced by the Municipals.

The public reliance level upon Government side regarding to the stray dog population management can be seen as increasingly high day by day, according to the 86% of key informal persons. Only 14% of Key Persons from Animal Welfare Groups denied and general public have strong desire to participate each and every performance for Stray Dogs' Welfare. According to the Table 4.2, the higher percentage on the weak knowledge on stray dogs control methods and strong reliance to the government illustrates the government need to show their plans, activities and strategies for controlling stray dogs with more transparency and openness. Also, the key performers need to create the chance by doing deepen advocacy on the public how much important

their participation in a successful stray dog populations management is. By doing so, the mutual trust between key performers and public can be built up extensively and greater knowledge can be accepted by the whole community. 86% of Key Interviewees said that government is trying to give awareness programs on how to participate well in every activities concerning with Stray Dogs. As the Public Health and Public Management concerning problems, not only YCDC but also interrelated departments and Multi-Stakeholders need to participate. All Key interviewees accepted that the stray dog problems cannot be solved successful without active participation of the General Public.

Key Persons Perception on Responsible Ownership

Concerning with public attitude and knowledge, 73% of interviewees responded that the public do not have knowledge about responsible ownership. Here, knowledge level is assessed upon the knowledge on the meaning of responsible ownership, the function and duties of responsible ownership, components of responsible ownership. According to the key interviewees, the public usually provide food to the stray dogs and contaminate the environment with food disposals. They do not take granted the booming amount of stray dog populations closely interrelated with their random feeding behavior. As dogs are relying only to the feeders for their living, they will no longer stay in the area where cannot find their food properly. Instead, they will migrate to the abundant food sources. Because of the above factors, 73% of key interviewees assume the public have no knowledge about the responsible ownership. Considering public health, when the Municipals try to control the enormous amount of canine population by different control methods, some of the people especially dog lovers cannot accept so well. Instead of providing food, people should practice and consider how they can adopt stray dogs like their pets, otherwise, how they can help to government in controlling stray dogs as responsible citizens. As a contrast, 27% of private shelter owners and Mingalar Myanmar Association remarked that the responsible ownership practice is noticed by the community. It probably the people in the animal welfare groups surrounding own the concept of responsible ownership than normal people. According to the below Table 4.3, there is no key persons who answered that public own strong knowledge on the concept of responsible ownership. The result shows people still need to be educated by the Government about the responsible ownership, also they need to have strong willingness to abide it. At the same time, law enforcement concerning to the wrong feeding behavior are need to be promoted.

Table 4.3 Attitude of Interviewees on Responsible Ownership

Public knowledge on responsible ownership	No. of interviewee	Percentage (%)
no knowledge	11	73
little knowledge	4	27
strong knowledge	0	0
KIIs perception on responsible ownership practice	No. of interviewee	Percentage (%)
Agree	3	20
Disagree	5	33.30
Neutral	7	46.70
Ways to promote responsible ownership	No. of interviewee	Percentage (%)
education talks, advocacy workshop	9	60
television and online awareness by celebrity	6	40

Source: Survey Data, 2019

Here, out of total interviewees, five people from all the private stray dog welfare groups want to encourage removing and replacing method to the shelters and support technical and funds more instead of responsible ownership practice as in Table 4.3. So, the result can be interpreted as Disagree. Relating to this issue, the three interviewees from YCDC said that only responsible ownership practice can enhance the effectiveness of stray dogs control practices. That is why, the response of 20% interviewees are assumed as agree. In addition, the key interviewees welcome all the private shelters but they need to be registered by reporting limited populations and health care plans for stray dogs. In addition, the officials can support as much as they can, including space for shelters and technical aids, only if the private shelters are registered. But the thing they added is that replacing shelter can be best in short term but for long term funding and resources inefficiency will surely become the biggest problem for the shelter owners. The

other interviewees made any remarks, agree or disagree concerning to the responsible ownership.

To promote the awareness about the responsible ownership, 60% (9 interviewees) agreed to create educational talks and advocacy workshops. At the same time, 40% (6 interviewees) from YCDC, Department of livestock and veterinarian and Ward Administration Office said that it is better to focus on television and radio awareness programs with Celebrity Actors and Actresses. As the typical awareness program could not persuade the public as usual. Making some changes can be challenges, but it can work well not like former awareness programs. While mitigating ill-knowledge of the general public on stray dog population control practices, the government need to persuade the public by saying the reasons why they should promote ownership upon stray dogs and why it is the best control practices comparing to other stray dogs control practices. All interviewees, 100% of interviewees strongly accepted that the public need to be advocated extensively by the Government, that is, stray dog populations control in Yangon Region cannot be successful by the Municipal alone.

Government Activities by the Key Performers and the Level of Effectiveness

For the question, the interviewees from the key ministries such as Department of livestock and veterinary, Department of the veterinary and slaughter (YCDC) said that government activities made by the key performers are castration, euthanasia, removing and replaced to the safe zones, vaccination controls, making registration and educating to the public. Only 5 out of 15 interviewees explained well about the activities made for the stray dog controls. The two interviewees from the Ministry of Health and Sport only know castration, euthanasia and vaccination controls. The official from the Ward Administration Department cooperated by capturing stray dogs for the vaccination injection and sending shelters, writing recommendation for dog registrations. The other 7 people generally said that killing dogs is the most common practice by the key performers and vaccination is doing for certain extent. Although the private volunteer dog lovers groups are trying to get more vaccination coverage on dogs, Municipals could not accept vaccinated dogs as safe ones. Instead, they focus on the lesser amount in the community by sending dogs to shelters, promoting ownership and killing.

Table 4.4 Control Activities by Key Performers

Control Activities	No. of Interviewee	Percentage (%)	Total
Euthanasia	15	100	15 (100%)
Castration	7	47	15 (100%)
Vaccination	8	53.30	15 (100%)
making registration	6	40	15 (100%)
education to people	5	33.30	15 (100%)
replacing to shelters	6	40	15 (100%)

Source: Survey Data, 2019

All of the interviewees' knowledge is presented in the above Table 4.4. According to the below Table 4.4, it can be identified that euthanasia method is noticed by all stakeholders. But castration method is known by 47% and vaccination by 53.3%. Education to public is the least well known method by key interviewees although it is practicing by the key performers. Not only the key interviewees from Department of veterinary and livestock, Department of veterinary and slaughter (YCDC), but also the official from Ward Administration Department participated in making registration for Dogs and replacing to the shelters.

For the question about the effectiveness on stray dogs control practices in Yangon region, it can be seen that there is a certain amount of effectiveness in controlling stray dog benchmarked on developing countries practices said by 66.7 % of the interviewees. It can be regarded as effective. According to the limited human and capital resources, euthanasia practice need to be practiced to mass amount and made limited control to the rest by CNRV and ABC methods. Practicing vaccination method alone or CNRV method to all populations could not be possible for the successful control in many developing countries and the stray dog problems will be last long for more than five decade. For the time being, the key performers in municipals are trying their best with the least practice on euthanasia year by year. The rest 34.3% said that they do not think the municipals and key performers did well in controlling stray dogs, but they are hoping to use the progressive practices in stray dogs control for the near future. For the contemporary moment, they are trying to practice more efficient ways only with their inferior resources.

It can be founded that no one responded the government activities' on stray dog population controls as spotless ones, but progressive one.

Key Performers' Barriers and Alternative Ways to Become the Effective Control in Future

Concerning with the barriers of Key Performers in Stray Dog Populations Control, 93% of KIIs agreed budget is the tremendous hurdles for the stray dog control management while the other 12% said that the technical and human resource insufficient problems are regarded as the disturbed hurdle. Also, 80 % of interviewees (12 people) agreed that mutual understanding between people and government are lack, that is, the procedures made by government have negative tendency for the public. Two of interviewees from YCDC and ward administration department said that people do not want to participate and disagree on stray dogs control methods using by YCDC. When YCDC officials captured dogs to send shelters and made castration, people who love stray dogs hid them, instead of doing cooperation.

Table 4.5 Alternative Ways to Become the Effective Control in Future

Alternative Ways to be more effective control	No. of Interviewee	Percentage (%)	Total
Persuading people participation	4	26.70	15 (100%)
law enforcement	11	26.70	15 (100%)
feeding behaviorism awareness programs	11	73.30	15 (100%)
Additional Government support	13	86	15 (100%)

Source: Survey Data, 2019

According to the above Table 4.5, some KIIs especially from the Municipal said that law enforcement, awareness programs on improper feeding manners, imposing registration on local stray dogs as pets and making censorship upon the foreign imported pet dogs are seriously need to be made. Other four stake holders from Animal welfare groups and Mingalar Myanmar assumed that persuading public participation can only get success. As it is public management and health related problems, the Municipal has to make action plan and strategies to change the mindset of the community. Moreover, international aids and supports for the capacity development need to be reachable more

than before. 13 people (86%) of the interviewees strongly remarked that the government should support for all key stakeholders including Municipals, private animal welfare groups, shelter owners and the general public to cooperate and coordinate in controlling stray dog populations with efficient practices and mitigating the stray dog related problems effectively.

Additional Suggestion for Stray Dogs Control Practices in Yangon Region

One of the key interviewees from the Department of Veterinary and Slaughter (YCDC) added that they are intensively making different kinds of control strategies not like the former years. Starting from 2019, the euthanasia method is nearly stopped as so many negative feedbacks from the public are considered. It is true that the different awareness programs by key performers are need to be contributed more and more within the community. At the same time, which control plans and strategies the municipal is doing for stray dog population in Yangon Region are need to be spoken out to the public in order to get lesser negativity feedbacks. The Superintendent from Yangon General Hospital said that the prevention from dog bite is seriously needed. Although the anti-rabies vaccine are contributed to enough amount, it had 69 dead patients from rabies suspect in 2018. After two weeks from the Dog Bite Center opening at YGH in 2019, the new patients 450 arrived because of the dog bites and most are bitten by the stray dogs in their streets and wards. Until the different control strategies cannot control well the mass amount of stray dogs in streets and wards, the only thing public can do is protect themselves and actively participate as much as they can in stray dog controlling procedures. The key interviewees from the department of livestock and veterinary said that although they are taking part as key performers in controlling stray dogs, their department has no absolute authority to make directions and announcements. As many veterinary are existed within livestock department, they can suggest many systematic plans that Municipal cannot think of. So, more cooperation and coordination making can create better off plans than before. The key interviewee from an animal welfare group added that more comprehensive animal rights law, animal protection law are needed to be promulgated. The owners of shelters suggested the key performers should try to listen the voices more from the private shelters, dog lovers groups and animal right activist groups. As the control procedures cannot do the Municipal alone, by giving more supportive help to them, the whole control process will get achievement earlier than expected. Also,

Municipal should try to get the additional international helps and skilled scholars from the third party sources to see the better result like developed countries.

4.5 Township Household Survey Results

Sanchaung Township is in the north central part of Yangon. The township comprises 18 wards with the population of 75325 and shares borders with Kamayut Township in the north, Kamayut township and Bahan Township in the east, Kyimyindaing Township in the west, and Dagon Township and Ahlon Township in the south. The township has 19 primary schools, two middle schools and four high schools. Dagon Center I and II are shopping malls inside the township, where there are many restaurants, fashion shops, and Mingalar Cinema. Other recreational spaces include Happy World recreation center and People's Park. As it is fully urbanized township of the Yangon Region, there are number of houses, total 5358 and 17338 households are comprised. For the Township Household Based Survey, the 200 random number of households situated in three wards: Mote lat Saung Kone (South), Kyun Taw middle and Kyun Taw South are selected.

With the purpose to analyze more different opinions, not only KII interview but also Township Household based survey are conducted by using quantitative and qualitative method. For the Township household Survey, the questionnaire is designated with the following core theme: the demographic data of the respondents, the public attitude on strays dogs, public knowledge on feeding and feeding behaviorism, public perception and willingness upon responsibility concerning with stray dogs control, public attitude and perception on YCDC's stray dog populations control activities, public perception on government's barriers and weaken public participation in stray dogs control activities.

Demographic Characteristic of Respondents

This section shows the demographic characteristic of the respondents including their type of Gender, Age Group and Education level.

Table 4.6 Demographic Characteristics of Respondents

Gender	No. of Respondent	Percentage (%)
Male	112	56.00
Female	88	44.00
Total	200	100
Age	No. of Respondent	Percentage (%)
18-25	69	34.50
26-40	73	36.50
above 40	58	29.00
Total	200	100.00
Education	No. of Respondent	Percentage (%)
primary level	2	1.00
secondary level	13	6.50
High school level	62	31.00
university level/graduated	123	61.50
Total	200	100.00

Source: Survey Data, 2019

As shown in Table 4.6, all demographic data are important to picture each household perceptions and attitudes towards stray dogs control practices in San Chaung Township. Out of 200 total respondents, 112 male and 88 female are participated. It can say that 56% are male respondents while 44% are female respondents. Nearly proportionate gender ratio can resolve many inclination and bias answers.

According to the Table 4.6, only 18 years and above are carefully selected as respondents of this survey for detailed and concrete public perceptions and attitudes living in Sanchaung Township and under 18 groups are exemption in this survey. Out of 200 respondents, 34.5% respondents who 18 to 25 age interval answered .The age group 26 to 40 are comprised by 36.5%.Here, 29% of respondents represent above 40 age group and it also least proportionate one in the survey.

For education level, it can be founded that only 1% of primary level are included in the total respondents. As Sanchaung Township is fully urbanized township in Yangon, the respondents' education background is mostly university level and above. Out of total 200 respondents, 123 respondents have university and above education level. With percentage, 61.5% of total respondents have university level education, 31% of total respondents have high school level and only 6.5% of total respondents have secondary level education background. After primary education level respondents, the respondents who have the secondary education background are participated as second least.

Public Experience and Perception on Stray Dogs

Table 4.7 Experience and Perception on Stray Dogs

Core Theme	Yes	No	No. of Respondent
having experience of stray dogs' bad manner	150 (75%)	50 (25%)	200
Existence of stray dogs in community can be annoyed	152 (76%)	48 (24%)	200

Source: Survey Data, 2019

The two questions about having experience of stray dogs' aggressive manner and its existence is disturbance for community are expressed with yes or no answers in the above table. As presented in the Table 4.7, the total 150 respondents answered yes while the other 50 respondents answered no for the question, having experience of stray dogs' aggressive manner. According to the mentioned Table 4.7, 75% of respondents have got experience while 25% of respondents do not have that experience. Apart from the dog lovers, stray dogs are regarded as dangerous canine because of their uncontrollable manner and rabies disease. The above Table 4.7 also illustrated the perception of the community which is the existence of stray dogs is a disturbance. The 152 respondents agreed the question but the other 48 respondents against it. With ratio, respondents answered 1:3 of disagree to agree and 76 % of the total respondents agreed that its existence will be a disturbance for community and only 24% denied it. Relatively, dog haters and people who have received aggressive manner of stray dogs definitely say yes, it means stray dogs existence is a disturbance for them. In contrast, dog lovers and only people who do not have experience with stray dogs' aggressive manner and dog haters

denied it and say no. From that result, it can be analyzed that there is a huge difference perceptions within one community on stray dog existence.

Feeding Practice and Behaviorism toward Stray Dog

Table 4.8 Feeding Practice and Behaviorism

Feeding Experience	No. of Respondent	Percentage (%)
feeding often	151	75.5
feeding sometimes	49	24.5
never feeding	-	-
Total	200	100
Reasons of feeding	No. of Respondent	Percentage (%)
Mercy	127	63.5
excess food at homes	45	22.5
others assumption	28	14
Total	200	100
Feeding behaviorism	No. of Respondent	Percentage (%)
feeding is right decision	124	62
feeding is wrong decision	76	38
Total	200	100

Source: Survey Data, 2019

The above Table 4.8 depicts how the feeding practice and households behaviorism of Sanchaung Township. In order to know their practice and perception on behaviorism, the three questions about feeding experience, reasons of feeding, attitude on feeding behaviorism are asked. According to the feeding experience, the three options such as feed often, feeding sometimes and never eating are given. For the feeding experience question, feeding often option is chosen by 151 respondents and feeding sometimes option is chosen by 49 respondents and no one choose never feeding option. By ratio, it can be said that 3:1:0 and 75.5% in usual feeding represents the respondents who have experience in usual feeding and 24.5% in sometimes feeding represents the respondents who have experience in sometimes feeding. 0% of never feeding answer shows that all respondents have feeding experience at least one time in our community and the highest percentage on usual feeding can illustrate that many respondents living in Sanchaung

Township create the main food source. Obviously, the existence of food source is the main cause of breeding abundant stray dog population.

For the question reasons of feeding upon stray dogs in our community are given the total three options. Here, 127 respondents give the reason of feeding as just mercy upon stray dogs, 45 respondents give the reason of feeding as excess amount of food at home and also 28 respondents give the reason of feeding as others assumption (religious, cultural,). In other words, out of 200 respondents, 63.5% of the total respondents feed stray dogs in their wards due to mercy, 22.5% respondents feed stray dogs because of the excess food left in their home and 14% respondents feed stray dogs due to the other assumptions. By identifying the result, it can be seen that people have mercy upon animals especially the kind of animals who only rely on people for their living and existence although people love stray dogs or not. But, people unlikely to notice feeding with different reasons can worsen the stray dogs control problem led by key performers.

As presented in the Table 4.8, the question about feeding behaviorism are conducted and there is two option feeding is right or wrong to analysis the inborn knowledge concern with feeding to stray dogs. According to result, it can be seen that 124 respondents assume feeding foods to stray dogs should be but the left respondent think feeding is wrong manner for stray dog control. With percentage, 62% of respondents accept the feeding is right decision but 38% of respondents deny it. It is controversial matter that animal feeding is a kind manner in general in the community. Howsoever, supporting stray dog population control can only be successful when lesser food sources than before state in the community.

Public Perception on Responsible Ownership

Table 4.9 Public Perception Concerning to the Responsible Ownership

Perception on Responsible ownership	No. of Respondent	Percentage (%)
willing to be responsible owner	50	25
unwilling to be responsible owner	150	75
Total	200	100
Common Type of stray dogs	No. of Respondent	Percentage (%)
owned stray dogs	10	5.00
ownerless stray dogs	190	95.00
Total	200	100.00

Source: Survey Data, 2019

The above Table 4.9 represents the public perception concerning to the responsible ownership practice. According to the perception of respondents, only 50 respondents out of 200 respondents have willingness to be responsible owner for stray dogs residing in their community. The rest 150 respondent said that they have unwillingness to become responsible owner for stray dogs residing in community. The reasons of unwilling to be responsible owner are not enough space to adopt them, already exist their pets, stray dogs' infected disease and few people said because of their appearance and aggressive manner. By percentage, 75% of total respondents do not want to adopt stray dogs as their own pet dog but 25% of total respondents agree to breed as their own pet dogs. Interestingly, the result concerns to the question about common type of stray dogs in wards and streets interconnect and reflect to the respondents' perception upon responsible ownership practice. As seen in Table 4.9, 95% of total respondents usually see only the ownerless stray dogs in their wards and streets most. From that result, it can be analyzed that the greater amount of unwillingness to be responsible owners is also one of the hidden reason of existing abundant ownerless stray dogs in community.

Public Participation by Households

Table 4.10 Attitude and Experience of Public Participation

Attitude on Chance of public participation in stray dogs control activities	No. of Respondent	Percentage (%)
can participate	127	63.5
cannot participate	73	36.5
Total	200	100
Experience of participation activity in stray dogs control	No. of Respondent	Percentage (%)
self-planning vaccination	20	10
self-planning castration	12	6
self-planning to send shelter	11	5.5
adoption as own pet	27	13.5
no participation	130	65
Total	200	100

Source: Survey Data, 2019

In the above Table 4.10, the total respondents expressed their attitude on chance of public participation in stray dogs control activities. Out of 200 respondents, 63.5% of total respondents said public have chance to participate in every stray dogs activity if they have desire. By donating and supporting the shelters, by cooperating with key performers, by adopting stray dogs and being a responsible owner and many more activities, people can be active participants in stray dog control management in community. Concerning with the experience of participation activity in stray dogs control, 10% of total 200 respondents have experience on self-planning vaccination, 6% of respondents have experience on self-planning castration, 5.5% of respondents have experience on self-planning to send shelter, 13.5% of total respondents make adoption stray dogs as own pets. Distinctly, 65% of total respondents have made no participation at all. By comparing the two questions' result, divergent and strange nature of human nature can be founded. Although most respondents accepted that there are so many given chances to make participation activities in stray dogs control management, no participation percentage is highest peak one and other public participation experiences in control activities are

relatively decline comparing to no participation rate. The total participation experiences of respondents in stray dogs control activities to the no participate rate is 1:2 in ratio.

Table 4.11 Public Participation Related Matter

Reasons of Weaken Public Participation in stray dog control	No of respondent	Percentage (%)
do not know how to participate properly	68	34.00
assumed as government duty	76	38.00
budget scarcity	23	11.50
Others	33	16.50
Total	200	100
Stray Dog Controlling is absolutely government duty	No of Respondent	Percentage (%)
do not accept	81	40.5
Accept	119	59.5
Total	200	100

Source: Survey Data, 2019

The total 200 respondents answered the reasons of weaken public participation in stray dogs control. 34% of total respondents do not know how to participate properly in stray dogs control activities. 38% of total respondents assume it as government duty only and 11.5% of total respondents express that the weaken participation occurs because of the budget scarcity. Other behind reasons answers are counted as 16.5%. Here, the two highest percentage answers by respondents can be interpreted as the two main reasons, public fault and government fault. As government might not be conduct intensive awareness program to public for example; how public can participate in a right way. Another thing is public have strong assumption that stray dogs control management only the matter government or key performers should undertake only. Apparently, 59.5% of total respondents answered as accepted and it can be literally presumed as public are seem to be excluded from the list of key performers.

Table 4.12 Public Priority on Different Kinds of Control Activities by Government

	First Priority	second priority	third priority	fourth priority
euthanasia	12	16	9	163
sheltering	98	65	31	6
vaccination	60	100	20	20
castration	10	155	20	5

Source: Survey Data, 2019

According to the Table 4.12, government' stray dogs control activities undertaking currently are chosen by the public priority. Although euthanasia is the most common method by the Municipal in former time, the public about 81.5% express using this method as last priority, by responding 163 out of 200. Here, the highest respondent rate is existed in sheltering method (49%) and vaccination (30%) and castration methods are voted as near or same rank by 77.5%. Trying to be prioritize sheltering, vaccination and castration methods, the government needs more efficient resources and external aids indeed.

Table 4.13 Level of Effectiveness and Government' Barrier for more Efficient Control

Effectiveness on stray dogs control activities by YCDC	No. of Respondent	Percentage (%)
much effectiveness	25	12.50
moderate effectiveness	115	57.50
no effectiveness	60	30.00
Total	200	100
Barriers of YCDC for more efficient control	No. of Respondent	Percentage (%)
budget limited	63	31.50
human and technical resources problems	73	36.50
weaken public participation	64	32.00
Total	200	100

Source: Survey Data, 2019

According to the Table 4.13, respondents presume how the effectiveness on stray dogs control activities by YCDC. Here, the effective level standardizes on public safe living, low stray dogs existence rate in wards. The highest percentage rate 57.5% is existed in moderate effectiveness while respondents agree no effectiveness by 30%. Indeed, the reality of stray dogs control even in township level is being far away from the successful stage. But, in Sanchaung Township, the key performers focus the stray dogs control to decrease the public health problems and some of the procedures might not be efficient and systematic but effectiveness is existed for certain extent. To be more efficient control, 73 out of 200 respondents remark human and technical resource problems as main barrier. 31% of respondents think the government limited budget is the main problem. 32% of respondents think weaken public participation. Generally, it can be found that not only government problems but also public side problems are participated as the main barriers of more efficient controls.

To be summarized, it is found that there have been different perspectives and attitudes on same situation mainly in KII interviews. In household survey, some of their reality practice and their needs are distinctly diverse especially in feeding behavior analysis questions and their willingness to practice responsible ownership. The controversial events occurred when animal welfare groups are demanding the more standardize method while the key performers is trying their best by interspersing with loads of barriers.

CHAPTER IV

CONCLUSION

5.1 Findings

The objective of the study is to explore the stray dog control activities in Yangon Region led by the key performers such as YCDC, department of livestock and veterinary, private animal shelters and multi-stake holders including the public. As a government, veterinary and slaughter department under YCDC are mainly undertaken as key performers. Before 2014, killing the mass amount of dogs using poison is the only practice they do for stray dogs controlling in community. Under the civilian government, structural changes and systematic strategies are started to use for more effective and efficient purposes. Generally, The veterinary and slaughter department led the stray dog populations control by practicing castration method, vaccination method, sheltering method, euthanasia method, dog registration method, awareness program promotions and law enforcement driving methods. The trend and practicing data are conveyed in the chapter three. In former Municipal act law 1874, Yangon Municipal Act Law 1922, YCDC law 2013, the role of stray dogs control was not prescribed with specific enforcement and functions. But in latest YCDC law 2018, the role and function of the veterinary and slaughter department are carefully considered. The penalties for feeding behaviors in public area are included by bills and actions.

In order to explore the more deepen situation concerns with stray dog control activities, the two types of survey are conducted in this study. The key informal and interview and Township based Household survey. From the KII interview, many different ideas and perspectives also their ground field experiences concerning with stray dogs control are collected. As this study is focused mainly on the control management activities, the key informal perspectives are most vital one to justify the strengths, hurdles, opportunities and weaknesses within the whole mechanism. From Household Based Survey, it can be exploited the genuine perception and attitude towards the stray dogs and related control practice by key performers.

According to the KII interview result, 67% officials agreed that the general public notice the euthanasia method although they are undertaking other methods. The ratio of

public aware on stray dog controlling method is 2:3 from euthanasia to combination of different stray dogs control methods. From the KII result, people have too little awareness on control practices. From the household survey, public wants to prioritize the sheltering and castration than euthanasia. Indeed, not only sheltering and castration are best methods to control stray dogs and each control system have their own causes. As a developing country, mass amount of dogs should be eliminated by euthanasia and the left amount need to be maintained by the different kinds of control methods.

Also 86% of key persons agreed that public reliance level are increasing day by day. From this point, it can be pointed out that stray dogs control activities are made only by the government without public help, instead public unsatisfying blame upon YCDC's stray dogs control methods are being increased day by day. The main reason why the public view every single activities made by government as purposing for worsen the situation. Indeed, the ways to erase that issue are inviting the public to investigate the government procedure and strategic plan, creating more chances to share their opinions and making cooperation in every single task of stray dogs controlling process. 73% of KII interviewees responded that the public do not have knowledge about responsible ownership. With mercy, they provide food to the stray dogs and contaminate the environment badly with food disposals. They do not take granted the booming amount of stray dog populations closely interrelated with their random feeding behavior. As dogs are relying only to the feeders for their living, they will no longer stay in the area where cannot find their food properly. Instead, they will migrate to the abundant food sources. Considering public health, when the Municipals try to control the enormous amount of canine population by different control methods, some of the people especially dog lovers cannot accept so well. Instead of providing food, people should practice and consider how they can adopt stray dogs like their pets, otherwise, how they can help to government in controlling stray dogs as responsible citizens. Also, it is seemed that the concept of responsible ownership is complicated and burden for the public, though the reality is not. According to the perception of respondents by household survey, only 50 respondents out of 200 respondents have willingness to be responsible owner for stray dogs residing in their community. The reasons of unwilling to be responsible owner are not enough space to adopt them, already exist their pets, stray dogs' infected disease and few people said because of their appearance and aggressive manner. From that result, it can be analyzed that the greater amount of unwillingness to be responsible owners is also one of the hidden reason of existing abundant ownerless stray dogs in community.

To promote the awareness about the responsible ownership, 60% (9 interviewees) agreed to create educational talks and advocacy workshops. At the same time, 40% (6 interviewees) From YCDC, Department of livestock and veterinarian and Ward Administration Office said that it is better to focus on television and radio awareness programs with Celebrity Actors and Actresses. As the key persons have experience of stray dog controlling, there have been difficulties in conducting awareness talks within the wards. Public do not have willingness to listen their education talks even for 15 minutes. Instead, online awareness programs conducting by the famous celebrities are assumed to get more transparent and get more viewers rate.

The total 200 respondents in household survey answered the reasons of weaken public participation in stray dogs control. 34% of total respondents do not know how to participate properly in stray dogs control activities. 38% of total respondents assume it as government duty only and 11.5% of total respondents express that the weaken participation occurs because of the budget scarcity. Other behind reasons answers are counted as 16.5%. Here, the two highest percentage answers by respondents can be interpreted as the two main reasons, public fault and government fault. As government might not be conduct intensive awareness program to public for example; how public can participate in a right way. Another thing is public have strong assumption that stray dogs control management only the matter government or key performers should undertake only.

Concerning with the barriers of Key Performers in Stray Dog Populations Control, 93% of KIIs agreed budget is the tremendous hurdles for the stray dog control management while the other 12% said that the technical and human resource insufficient problems are regarded as the disturbed hurdle. But in household based survey, many people accept the technical and human resources insufficiency is the main reason. For the question about the effectiveness on stray dogs control practices in Yangon region, it can be seen that 66.7 % of the KII interviewees regarded as effective because they are trying with strategic plans than before and also the public accept the effectiveness is moderate amount level. Still, the efficient quality of control method are far to be reached.

5.2 Recommendations

In every public management issue, the government and the key performers are the vital ones to solve with different kind of methods and strategies. But the existence of stray dogs and their related problems can only get the achievement with multilevel cooperation

and mutual understanding. As the public actively can participate in every stray dog activities by supporting responsible ownership, by changing the feeding behaviors, by participating eagerly when the officials do many stray dogs control activities in their streets and wards. As a dog lover and activist groups, instead of blaming the government's every single activities but advocacy and participation should be done. Mutual understanding between stakeholders is needed to be built up between the public and the key performers. As a government, every kind of their activities needed to be expressed with greatest transparency and openness. At the same time, the public must change their wrong behavior such as weaken participation, improper feeding and try to construct understanding to the government constraints and barriers. Distinctively, the public think the government has no plan in stray dog controlling. In a contrast, the government is undertaking the progressive practices and plans although it might not be fully efficient plans like developed countries. As a government, law enforcement should be promoted than the current situation. Although many regulations and law penalties are expressed in YCDC law 2018, the practical punishment is relatively low. By cooperating with international organization, more vaccination campaign and intensive awareness programs for the public should be done. For the very first step, gathering the total population of stray dogs in Yangon Region should be done. The estimated cost including time, money, technical skill related cost for the effective coverage control is needed to be calculated. By cooperating with third party animal welfare groups, the mission will surely get success. Last but not least, the stray dog control activities can get the maximum efficiency only when the mutual understanding, multi participation by all stakeholders are built up comprehensively.

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APPENDICES

APPENDIX I

My name is Khuncho Thanthar Sint (Roll no- MPA5). I am a master of Public Administration student from the Yangon University of Economics. My Topics is **Stray Dogs Populations Control Practices in Yangon**. I would like to conduct KII survey and I am looking forward to answer my questions by taking 15 minutes .It will be great support for my thesis and I am always grateful for it.

STAY DOGS POPULATIONS CONTROL IN YANGON

What is your current position?

What is your current place of work or institution?

Are you a representative of

1. municipal
2. ministry of health & sport
3. department of veterinary care
4. freelance volunteer doctors
5. owner of shelter
6. a provider of in-service or professional development training
7. other....

People

1. In your opinion, how much knowledge people have in stray dog control of our country?(government activity)
2. Do you think how many methods people notice used in stray dog controls by the government?
3. In your opinion, public usually think the stray dog control only concern to the government?
4. Why do they think like that?

5. In your opinion, people have enough knowledge about responsible ownership?
6. In your opinion, how do government need to promote the awareness about the responsible ownership?

Officials

1. Do you know the government activities for the effective dog control. if you know please describe?
2. Do you think the current stray dogs control methods are effective ?
3. What is the government's barriers to be more effective control ?
4. Which government's stratiges are suitable for future effective dog's control ?
5. What do the government needs to be effective control ?

THANK YOU SO MUCH FOR YOUR ANSWERS

APPENDIX II

ကျွန်မ မခွန်းချိုသံသာဆင့် သည် ရန်ကုန်စီးပွားရေးတက္ကသိုလ် ပြည်သူ့ရေးရာစီမံခန့်ခွဲမှု မဟာဘွဲ့နေ့သင်တန်း အတွက် ဘွဲ့ယူစာတမ်း ပြုစုနေသော ကျောင်းသူတစ်ဦး ဖြစ်ပါသည်။ လူကြီးမင်းတို့ အချိန်မီနစ်အနည်းငယ်ပေးဖြေဆိုမှုတိုင်းသည် ကျွန်ုပ်အတွက် များစွာ အကျိုးရှိမည်ဖြစ် ပြီး လူကြီးမင်းတို့၏ဖြေကြားမှုတိုင်းကို တစ်ကိုယ်ရည်အတွက် သာ လှိုပွက်စွာ အသုံးပြုမည်ဖြစ်ကြောင်း အာမခံပါသည်။

လေလွင့်ခွေးများထိန်းသိမ်း စီမံခန့်ခွဲမှုနှင့် ပတ်သတ်၍ သဘောထားစစ်တမ်းကောက်ယူခြင်း

ဖြေဆိုသူ၏ ကိုယ်ရေးအချက်အလက်များ

လိင်အမျိုးအစား

အမျိုးသား	
အမျိုးသမီး	

အသက်အရွယ်

၁၈ နှစ် - ၂၅ နှစ် အကြား	
၂၅ နှစ် - ၄၀ အကြား	
၄၀ နှစ်နှင့် အထက်	

ပညာအရည်အချင်း

မူလတန်း	
အလယ်တန်း	
အထက်တန်း	
ဘွဲ့.ရ/ ဘွဲ့.လွန်	

ဖြေဆိုသူ၏ သဘောထားအမြင်များ

သင့်ပတ်ဝန်းကျင် တွင် တွေ့နိုင်သော လေလွင့်ခွေး အမျိုးအစား (တစ်ခုသာလျှင် အမှန်ခြစ် ✓ ပေးပါ)

ပိုင်ရှင်ရှိ လေလွင့်ခွေး	
ပိုင်ရှင်မဲ့ လေလွင့်ခွေး	

သင့်ပတ်ဝန်းကျင်တွင် ပိုင်ရှင်မဲ့လေလွင့်ခွေးများ၏နှောင့်ယှက်မှုကို ခံစားရဖူးပါသလား။

(တစ်ခုသာလျှင် အမှန်ခြစ် ✓ ပေးပါ)

ခံစားခဲ့ဖူးသည်။	
မခံစားခဲ့ဖူးပါ။	

လေလွင့်ခွေးများရှိနေခြင်းသည် သင့်အတွက် အနှောင့်အယှက်ဖြစ်စေသည်။ (တစ်ခုသာလျှင် အမှန်ခြစ် ✓ ပေးပါ)

ဖြစ်စေသည်	
မဖြစ်စေပါ	

လေလွင့်ခွေးများသည် သင့်အတွက် အနှောင့်အယှက်ဖြစ်ခဲ့လျှင် အောက်ပါအချက်များ ကြောင့်ဖြစ်သည်။

ပတ်ဝန်းကျင်ညစ်ညမ်းစေခြင်း	
ရမ်းကားကိုက်ဆွဲလေ့ရှိခြင်း	
ခွေးရှူးရောဂါ ဖြစ်စေနိုင်ခြင်း	
အခြားရောဂါပိုးများကို သယ်ဆောင်လာခြင်း	

သင်သည် ပိုင်ရှင်မဲ့လေလွင့်ခွေးများကို အစာကျွေးဖူးပါသလား။ (တစ်ခုသာလျှင် အမှန်ခြစ် ✓ ပေးပါ)

ကျွေးဖူးသည်။	
မကျွေးဖူးပါ။	

ပတ်ဝန်းကျင်ရှိ လေလွင့်ခွေးများကို အစာကျွေးခြင်း အပြုအမူသည် မည်သည့် အချက်များကြောင့်ဖြစ်လာသည်ဟု သင်ယူဆပါသနည်း။
(တစ်ခုသာလျှင် အမှန်ခြစ် ✓ ပေးပါ)

ခွေးလေခွေးလွင့်များကို သနားသောကြောင့်	
အိမ်တွင် ပိုလျှံနေသောကြောင့်	
အခြားအယူအဆများကြောင့်	

ပတ်ဝန်းကျင်ရှိ လေလွင့်ခွေးများကို အစာကျွေးသင့်ပါသလား။
(တစ်ခုသာလျှင် အမှန်ခြစ် ✓ ပေးပါ)

ကျွေးသင့်သည်	
မကျွေးသင့်ပါ	

ပြည်သူတစ်ဦးအနေဖြင့် လေလွင့်ခွေးများကို တစ်ပိုင်တစ်နိုင် တာဝန်ယူမွေးမြူလိုစိတ် ရှိပါသလား။

(တစ်ခုသာလျှင် အမှန်ခြစ် ✓ ပေးပါ)

ရှိပါသည်	
မရှိပါ	

ပြည်သူတစ်ဦးအနေဖြင့် လေလွင့်ခွေး ထိန်းသိမ်းစောင့်ရှောက်မှုများတွင် ပါဝင်ဆောင်ရွက်နိုင်သည် ဟု ထင်မြင်ပါသလား။

(တစ်ခုသာလျှင် အမှန်ခြစ် ✓ ပေးပါ)

ထင်မြင်ပါသည်	
မထင်မြင်ပါ	

ပြည်သူတစ်ဦးအနေဖြင့် လေလွင့်ခွေး ထိန်းသိမ်း စောင့်ရှောက်မှုများနှင့် ပတ်သက်၍ အောက်ပါ တို့ကို ကိုယ်တိုင် ပြုလုပ်ခဲ့ဖူးသည်။

(တစ်ခုသာလျှင် အမှန်ခြစ် ✓ ပေးပါ)

လေလွင့်ခွေးများကိုတစ်ပိုင်တစ်နိုင်ကာကွယ်ဆေးထိုးပေးခြင်း	
လေလွင့်ခွေးများကိုတစ်ပိုင်တစ်နိုင် မျိုးပွားထိန်းချုပ်ပေးခြင်း	
လေလွင့်ခွေးများကို တစ်ပိုင်တစ်နိုင် ခွေးဂေဟာပို့ပေးခြင်း	
လေလွင့်ခွေးများကိုအိမ်မွေးခွေးအဖြစ် မွေးစားခြင်း	
မပြုလုပ်ခဲ့ဖူးပါ	

လေလွင့်ခွေးများကိုကောင်းစွာထိန်းသိမ်းစီမံခန့်ခွဲမှုသည်အစိုးရအဖွဲ့၏ လုပ်ဆောင်ရမည့်တာဝန်သာဖြစ်သည်ဟု သင်လက်ခံပါသလား။

(တစ်ခုသာလျှင် အမှန်ခြစ် ✓ ပေးပါ)

လက်မခံပါ	
လက်ခံပါသည်	

မြို့တော်စည်ပင်၏ လေလွင့်ခွေးများ ထိန်းသိမ်းမှုနှင့် ပတ်သက်၍ လုပ်ဆောင်နေသည့် လုပ်ငန်းစဉ်များကို သင်ဦးစားပေးဆောင်ရွက်စေလိုသည့် အဆင့်အတိုင်း အမှတ်စဉ် (၁ မှ ၄ အထိ) တပ်ပေးပါ။

(၁=ပထမဦးစားပေး၊ ၂=ဒုတိယဦးစားပေး၊ ၃=တတိယဦးစားပေး၊ ၄=စတုတ္ထဦးစားပေး)

လုပ်ငန်းစဉ်များ	ဦးစားပေးအဆင့်	နမူနာ
အဆိပ်ချခြင်း		၃
ဂေဟာပို့ခြင်း		၁
မျိုးပွားမှု ဟန့်တားခြင်း		၄
ကာကွယ်ဆေးထိုးပေးခြင်း		၂

မြို့တော်စည်ပင်၏ လေလွင့်ခွေးနှင့်ပတ်သက်၍ ထိန်းချုပ်ခြင်းသည့် နည်းလမ်းများသည် ထိရောက်မှုရှိပါသလား။

(တစ်ခုသာလျှင် အမှန်ခြစ် ✓ ပေးပါ)

ထိရောက်မှု ရှိသည်	
အသင့်အတင့် ထိရောက်မှု ရှိသည်	
ထိရောက်မှု မရှိပါ	

မြို့တော်စည်ပင်၏ လေလွင့်ခွေးများ ထိန်းသိမ်းမှုနှင့် ပတ်သက်၍ ပိုမိုကောင်းမွန်သော အခြားနည်းလမ်းများ ရှိလျှင် ဖော်ပြပေးပါ။

၁။	
၂။	
၃။	

မြို့တော်စည်ပင်၏ လေလွင့်ခွေးနှင့် ပတ်သက်၍ ထိန်းချုပ်နိုင်မှု အားနည်းခြင်းမှာ မည်သည့်အခက်အခဲဟု ထင်ပါသနည်း။
(တစ်ခုသာလျှင် အမှန်ဖြစ် ✓ ပေးပါ)

ဘတ်ဂျက် မလုံလောက်သောကြောင့်	
နည်းပညာနှင့် ကျွမ်းကျင်လုပ်သား ပြည့်စုံမှု မရှိသောကြောင့်	
ပြည်သူတို့ ပါဝင်မှု အားနည်းသောကြောင့်	

ပြည်သူတို့အနေဖြင့်လေလွင့်ခွေးများထိန်းသိမ်းမှုတွင်ပါဝင်ပတ်သက်မှု အားနည်းခြင်းမှာအောက်ပါ တို့ကြောင့် ဖြစ်သည်။(တစ်ခုသာလျှင် အမှန်ဖြစ် ✓ ပေးပါ)

အစိုးရ၏တာဝန်သာ ဖြစ်သည်ဟု ယူဆသောကြောင့်	
မည်သို့ကူညီရမှန်း မသိသောကြောင့်	
ငွေကြေး မရှိ၍	
အခြား	

ပြည်သူတစ်ဦးအနေဖြင့် လေလွင့်ခွေး ထိန်းချုပ်၊ စီမံခန့်ခွဲမှုများနှင့် ပတ်သက်၍ အခြားဖြည့်စွက်လို သည်များရှိလျှင် -

.....
.....
.....

(ယခုလိုဖြေဆိုပေးသည့်အတွက်ကျေးဇူးတင်ပါသည်။)

APPENDIX III

ရန်ကုန်အနောက်ပိုင်းခရိုင် ၊ စမ်းချောင်းမြို့နယ်အခြေပြမြေပုံ

